APRIL 2, 1955

Vol. 148 — No. 14

MANAGEMENT • PLANT • TRAFFIC • ACCOUNTING • LEGAL • COMMERCIAL

# Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

Published every week on Saturday by TELEPHONY PUBLISHING CORPORATION, 608 South Dearborn Street, Chicago 5, Illinois. Subscription $3.50 per year. Entered as second class matter at the Post Office at Chicago, Illinois, under the act of March 3, 1879

Guaranteed Circulation This Issue

10,485 of Which 9,960 is Paid

XUM

ITY TELEPHONE COMPANY
Special Offer
6K
OFFICE SYSTEMS
AT MODEST
MONTHLY RATES

# if you had a display window *this* would really do business!

If increasing your revenues an *easy* and *profitable* way is an objective, then take the Stromberg-Carlson "6K" multi-line system into your selling program.

Business subscribers whose needs involve sharing of outside lines—with or without intercommunication—welcome the modern convenience of this equipment. The ability to Answer, Originate, Hold or Transfer calls on 1 to 5 lines, plus the amazing variety of arrangements to which the 6 buttons can be put—these advantages have only to be *shown* to promote favorable acceptance and often a contract.

What's more, the "6K" is the easiest multi-line system to *install* and *maintain*. The entire system is standardized, and telephone and terminal box are factory-wired. All of which means less service costs and more profit when you *do* "sell" one.

*Ask any Stromberg-Carlson representative to help you line up prospects and, if you want, call on them with you.*

Stromberg-Carlson®

ROCHESTER 3, NEW YORK

BRANCH OFFICES: Atlanta 3, Ga. • Chicago 6, Ill. • Kansas City 8, Mo. San Francisco 3, Calif. • Manufacturing Branch, Dallas, Texas.

**NOTE**

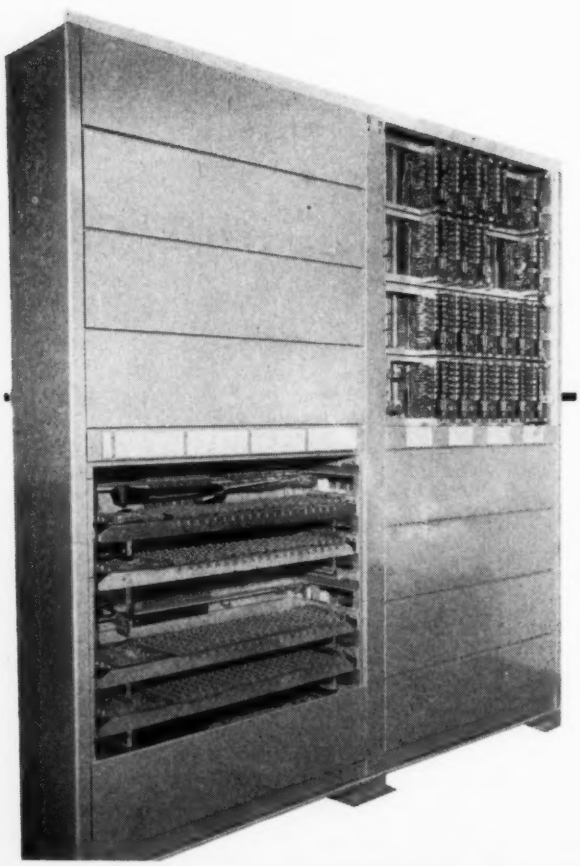
We are glad to announce that production of "6K Systems" allows for *immediate delivery*.

Also—a new Engineering Bulletin has been completed on the operation and maintenance of this system. Just ask your nearest branch for bulletin T-129.

# CONSIDERING DIAL?

## Then look to KELLOGG for the switching system that's just right for your requirements

It makes good sense to contact Kellogg if you are considering dial conversion, because Kellogg offers you the most comprehensive line of dial switching equipment to choose from in the Independent field today. Whether your operation is large, medium or small, whether your budget is a generous or modest one—there's a Kellogg dial switching system that can be tailored to your specific needs. These two pages will give you an idea of what we can do for you, and more detailed information is offered in the coupon below.



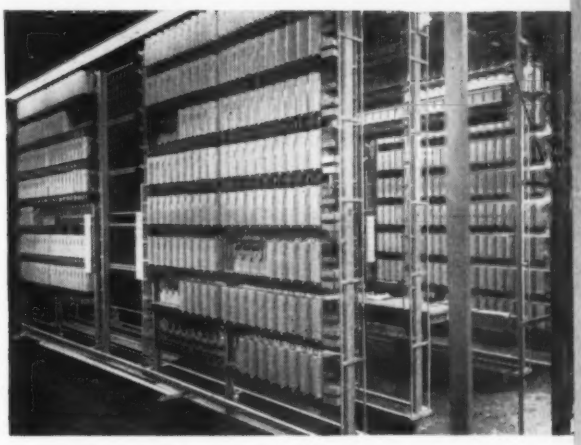
## CROSSBAR

• Practically Eliminates Routine Maintenance • Drawer Mounted Switches • Lower Installation Costs for Additions • No Multiple Wiring • Full Station Intercept • PBX Grouping Service (without using consecutive numbers) • Maximum Expansion • Instantaneous Seizure of Paths without Hunting • High Traffic Capacity • Extra Long Life • Adaptable to Inter-Toll Dialing

XUM

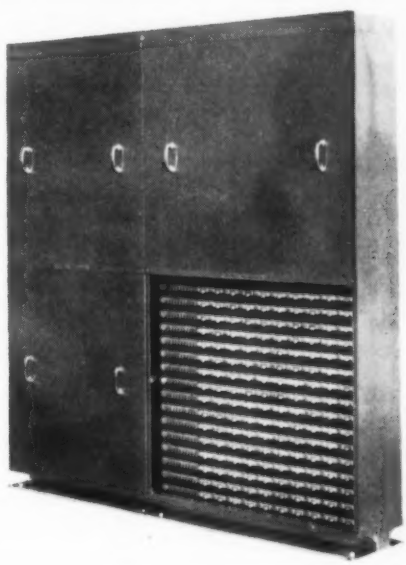
## STEP-BY-STEP

• Long Life, Low Cost Operation • Ease of Maintenance • Simplicity of Equipment and Circuits • Compact Space-Saving Arrangement of Equipment • Trunking Flexibility • Ready, Low-Cost Expandability for Increased Station and Traffic Requirements • Each Switch a Separate Unit, Easy to Check and Adjust • Highest Service Standards



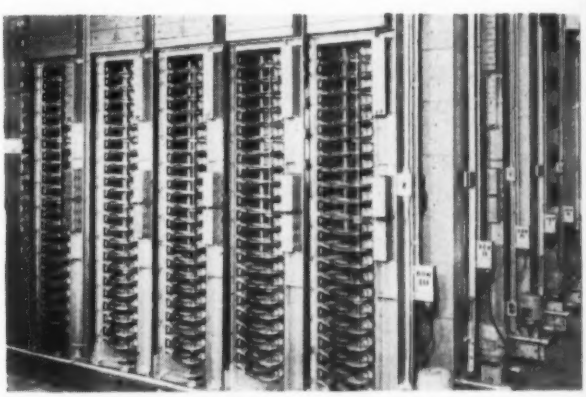
## RELAYMATIC

• Dependable Automatic Switching • Accomplishes Complex Switching Operations Smoothly, Quietly • Simplified Installation • Easy Maintenance—All Wiring and Components Instantly Accessible • Simplified Wiring • Operates With Any Type of Trunk Line • Line Circuits May be Assigned for Common Battery Local or Rural, Trunk or Pay-Station Service • Local Lines Provide Up to 10-Party Selective Divided Ringing • Adaptors Available for Grounded Rural Lines



## 7-A2 ROTARY

• Motor Driven • Register-Type System • Revertive Pulsing • Rugged Construction • Extremely Long-Life • Especially Adaptable to Large Exchanges • Large Trunk Groups • Adaptable to Inter-Toll Dialing



**MAIL COUPON** to get complete facts on Kellogg Dial Switching Equipment. Your inquiry will receive immediate attention.

KELLOGG — DIVISION OF IT&T

**KELLOGG SWITCHBOARD AND SUPPLY COMPANY**
*A Division of International Telephone and Telegraph Corporation*

**SALES OFFICE: 79 WEST MONROE STREET, CHICAGO 3, ILLINOIS**

**WAREHOUSES:** Chicago 38 • Kansas City 1 • Mansfield, Ohio • St. Paul 4 • Dallas 2 • San Francisco 3

**BRANCH OFFICES:** New York 7 • Portland 5 • Los Angeles 13

**KELLOGG SWITCHBOARD AND SUPPLY COMPANY**

Sales Offices: 79 West Monroe Street, Chicago 3, Illinois
Please send more detailed information on the following:

☐ Crossbar ☐ Relaymatic
☐ Step-by-Step ☐ 7-A2 Rotary
☐ Have your representative contact me.

Name_____

Company_____

Address_____

## FLASHES AND PLUGS

**SAFETY ISLAND.** An Albany, N. Y., gentleman had no desire to test the adage that "barking dogs don't bite."

He was headed to buy food for his dog when two other canines interrupted a fight and gave chase. He ducked into a telephone booth, where he spent a stuffy 35 minutes with first one and then both of his pursuers snapping at him.

A man of resource, he finally took advantage of his vantage point and dialed the Humane Society, whose representative soon put in an appearance and coralled the dogs. "Barking dogs don't bite," the canine authority said.

"I was taking no chances," rebutted the booth fugitive.

• • •

**MODERN MIRACLE.** Mr. A. Goldberger of the American Radio Co., Inc., likes to tell about the Frenchman he knows, associated with the communications industry, who returned to his native land after a visit to the U.S.A.

Questioned as to what impressed him the most on his stay in America, he was wont to reply:

"Well, it wasn't the tall buildings. Nor the great number of modern motor cars. Nor even the atom bomb explosions in Nevada.

"It was the *telephone service.* Just think of it—you can call all the way across the States . . . 3,000 miles—and be connected in a minute or two!"

• • •

**JUST SO.** A wagon piled high with corn snagged a farmer's low-hanging telephone wire in Butler County, Kan., relates the *Southwestern Telephone News.*

The two farmers in the wagon stopped, bent hooks in the broken ends of the wire, then tied them together with binder twine.

As they resumed their journey, one was heard to remark:

"Bill's got no complaint to make. His wire's tighter'n it was before."

• • •

**AGAIN, THE TELEPHONE.** A janitor in distress got himself rescued recently—thanks to the telephone and an American flag flown upside down. Trapped on the roof of a Baltimore department store, the employe might have had a long wait for rescue when an ill wind blew the trap door shut. Being nimble-witted, however, he lowered the flag that was flying on the roof and hoisted it again—upside down. The traditional sign for help eventually was spotted by a college student, whose eye most fortunately wandered while she was seated in the dentist's chair. Her telephone call soon launched the rescue squad.


### CIRCULATION

**Guaranteed circulation of this issue is 10,485, of which 9,960 is paid.**



# Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

**April 2, 1955**


# Contents


POWER EQUIPMENT FOR TELEPHONE CENTRAL OFFICES—Part 1 ..... 17
*By C. H. Achenbach*

IN THE NATION'S CAPITAL ..... 20
*By Francis X. Welch*

MERCHANDISING TELEPHONE SERVICES ..... 23
*By W. K. Mosley*

THE PLANT MAN'S NOTEBOOK ..... 27
*By Ray Blain*

PLANT MAN'S QUIZ ..... 28
*By Ray Blain*

COURTS AND COMMISSIONS ..... 30



H. D. FARGO Jr., *President & Advertising Manager*
R. C. RENO, *Vice President & Editor*
H. D. FARGO, *Vice President & Treasurer*
A. J. STULTS, *Secretary & Western Manager*
DAN FARGO, *Managing Editor*
FRANCES E. CRETCHER, *Associate Editor*
RAY BLAIN, *Technical Editor*
FRANCIS X. WELCH, *Washington Editor*
MAYME WORKMAN, *Traffic Editor*
VIVIAN RYDEN, *Circulation Manager*

WESTERN REPRESENTATIVES:
McDonald-Thompson, San Francisco, Cal.
Also offices in Los Angeles; Seattle, Wash.; Houston, Tex., and Denver, Colo.

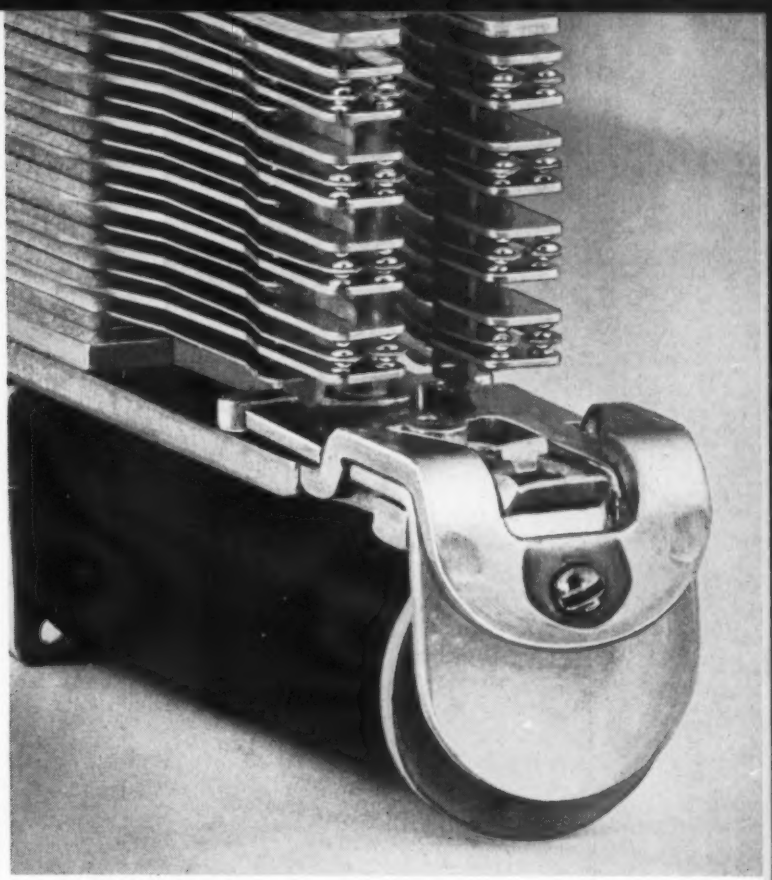


Published by
TELEPHONY PUBLISHING CORP.

Vol. 148, No. 14. Published every week on Saturday by TELEPHONY PUBLISHING CORPORATION, 608 South Dearborn St., Chicago (5), Ill. 20 cents per copy (except special issues). Subscription $3.50 per year U. S.; $4.50 Countries in U. S. Spanish Postal Zone; $4.50 Canada; $5.50 Other Countries.

608 S. Dearborn St., Chicago (5), Ill., U. S. A.
Telephone WA bash 2-2435

Spring pile-up of conventional relay with single contact. A typical exchange has thousands.



Spring pile-up of Stromberg-Carlson "A" Type Relay, showing twin precious metal contacts.

# *When is 2 to 1 actually 22 to 1?*

## ANSWER: When you're talking about the comparative reliability of Twin versus Single contacts

The XY® Dial System employs twin contacts throughout—in switches, relays and all spring pile-ups. And that means very great savings to *you*. Here's why:

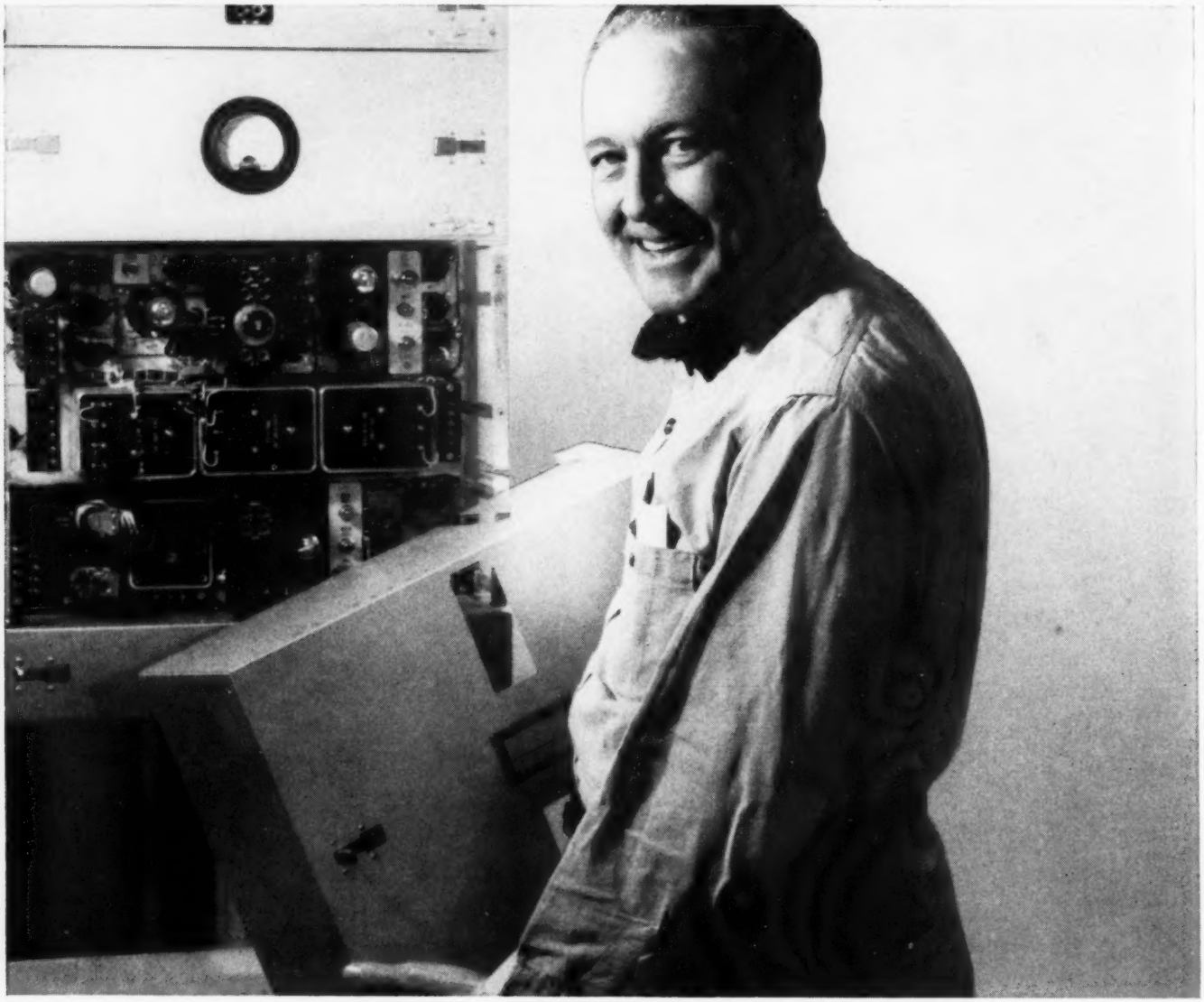
Laboratory tests show that single contacts—at 30 grams pressure—will probably fail in the ratio of 4.3 to a million operations. At the same total pressure (15 grams on each contact), the failure probability of double contacts is .18232 per million operations.

That's exactly 22.7 to 1 in favor of XY and a great saving in maintenance costs—just one of many reasons why the trend is to Stromberg-Carlson. Why not ask your nearest branch to tell you *all* of the superior features of this equipment?

## Stromberg-Carlson® XY

ROCHESTER 3, NEW YORK

*Sales Offices: Atlanta 3, Chicago 6, Kansas City 8, Rochester 3, San Francisco 3. Mfg. Branch, Dallas, Texas.*



# *"I'm adding new channels—the easy way"*

*"We're following the lead of most of America's major telephone companies. We've found that Lenkurt Type 33A Carrier is the least complicated, least expensive, most reliable way to add new channels."*

This carrier "proves in" over physical lines—even for distances as short as 10 miles! And with Lenkurt Type 33A *you can start small and expand!* Begin with a single channel, add a second, then a third. Add more Type 33A channels on nearby pairs, and if heavier traffic demands it, add Lenkurt high-frequency systems above these channels, on the same lines.

*It's easy to install, too!* With Lenkurt Type 33A Carrier, you simply bolt a compact, factory-assembled, factory-tested unit in place; hook up line, power, voice termination, and ground connections—and cut it in! Compare this with stringing new wire—buying the necessary hardware, operating a line crew, rescheduling other line and maintenance work.

*It's simple to service and maintain.* Standard, low-cost testing equipment and familiar techniques take care of all tests. If you're short of transmission channels—Lenkurt Carrier can provide them with simplicity and ease.

Write for Bulletin T-33A-P20 . . . or consult Automatic Electric carrier engineers for their specific recommendations. Address: *Automatic Electric Sales Corporation, 1033 West Van Buren Street, Chicago 7, Illinois.* OR call HAymarket 1-4300. Offices in principal cities.

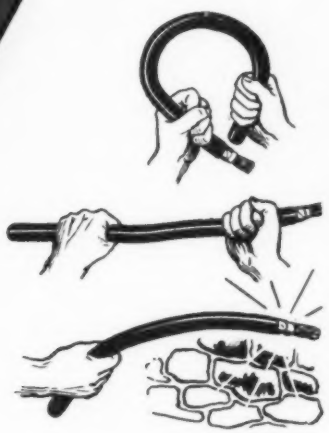
Manufactured for

AUTOMATIC ELECTRIC

**AUTOMATIC ELECTRIC — A GREAT NAME IN COMMUNICATIONS — LENKURT**

# "NOT EVEN A CRACK APPEARED..."

**it was 48 degrees below zero and**



**I TURNED it**

**I TWISTED it**

**I BANGED it**

**against a wall"**

This is what Wire Chief, **Harry Reimer** reports about

# ANSONIA Ankoseal®

*THE first ALL-PLASTIC CABLE*

Mr. Harry Reimer, who carried out the rugged test described at the right, is Wire Chief of the Municipal Utilities System of the City of Fairbanks, Alaska.

**It is added proof of the quality of Ankoseal Cable and its ability to stand up under the most rugged operating conditions.**

"I gave it (Ankoseal) a rugged test. The cable was placed outdoors until the temperature hit –48 degrees. I then tried my best to break or crack the cable by every conceivable means. It was turned, twisted and even hit against a block wall. After this treatment, I inspected the cable and found no crack in the outer jacket nor were any of the conductors injured. I convinced myself that if this cable could stand such treatment at –48 degrees, it certainly will stand the test hanging on the poles at –60 degrees.

***ANKOSEAL CABLE** is sold to independent telephone companies through authorized Telephone Supply Distributors only.*

## THE ANSONIA WIRE & CABLE COMPANY

ANSONIA, CONNECTICUT Phone REGENT 4-3306

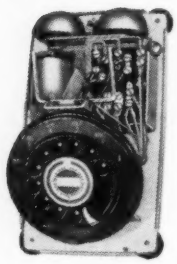
# Odds in

**NORTH N-541**
that modern look . . . designed for efficient, day-in-day-out service. Handpiece is light weight—better balanced.

**NORTH N-541**
base-mounted dial, ringer, condenser, capacitors; easy accessibility.

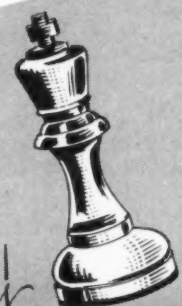
**NORTH N-541**
case is completely removable . . . made of high impact plastic . . . stronger, more attractive.

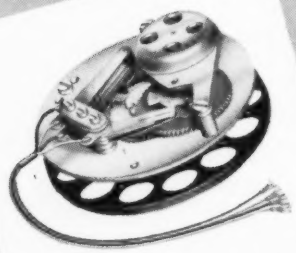
**NORTH N-541**
new high impedance ringer . . . single coil with laminated core. Better than 100,000 ohms resistance at 1000 cycles. Harmonic, decimonic, synchromonic, super-imposed and straight line ringing.



**NORTH N-54**
dial mechanism protected by plastic dust cap.

**NORTH N-541**
new and better transmitting and receiving units . . . improved anti-side-tone circuit . . . 10 db gain over previous models. Compensating network . . . clear, natural "talking quality" on long or short loops.





**NORTH N-541**
dial is easily detached for adjustment or inspection. Smooth operation assured by extra large diameter governor. Non-stick gear train . . . no worm gears.

NORTH

XUM

# your favor . . .

Ever notice how your telephone business resembles a chess game? Make the right moves and you'll always have the odds in your favor.

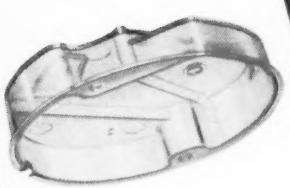
Take for instance the selection of equipment. You are open to certain checkmate if you make your choice on any other basis than . . .

What quality of service will it provide my customers?
What impression of my company will they get from it?
What will it cost to maintain?

To visualize "a move in the right direction" analyze the plus features squared in at left. You can see how you can be sure of "odds-on" service *and* public relations . . .

Available in Canada through ERICSSON TELEPHONE SALES of CANADA, Ltd. 1410 Stanley Street Montreal 2, P.Q.

**NORTH N-541**
completely new dial . . . extended number plate . . . easy to read . . . "feather touch" smooth operation . . . quiet.



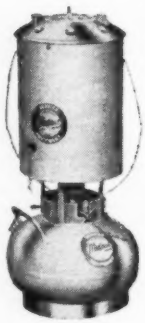
**NORTH N-541**
optional features: hook-switch latch, push-to-talk handpiece, push-button signaling, 1-2 line switching, external ringer adjustment.

# with NORTH'S NEW N-541 TELEPHONE

**THE NORTH ELECTRIC MANUFACTURING COMPANY**

601 South Market Street • Galion, Ohio

# Automatic's pointers for plantmen

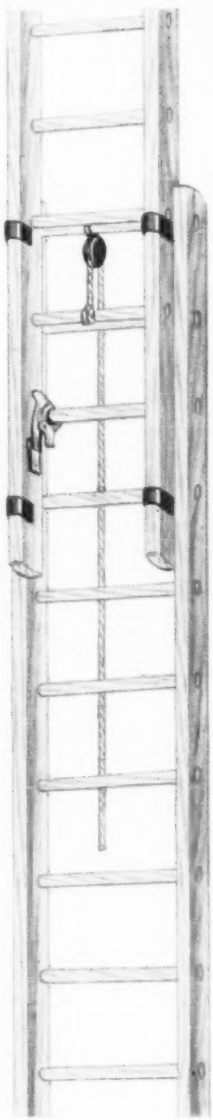


## Going Up? Be sure of your steps!

The strength of a Babcock ladder is apparent the moment you set foot on a rung. The ladder's firmness, solid feel and smooth finish are all proof of top quality and workmanship. And as your confidence increases with each sure-footed step, it is reflected in more productive, efficient work.

This "Utilities grade" extension ladder is made of selected white spruce in two 12-foot sections; top part complete with spring lock, pulley and rope. Weighs only 48 pounds. Other sizes also available!

| Cat. No. | Each |
|---|---|
| S-5153 | $27.45 |



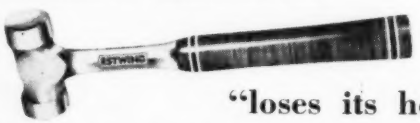
## This Mutual gas tank performs like magic:

- Can be transformed in seconds into a furnace — heater — soldering assembly — field stove.
- Lights up instantly, with one match, and a simple twist of the wrist. Pumping time is changed to *working* time!

Mutual's liquid propane gas tank has proved its versatility. With proper attachments, it's a furnace melting a pot of lead; a heater thawing out a crew of men; a soldering assembly for cable splicing; or a field stove brewing a pot of steaming coffee.

It's almost magical, too, the way this tank gets going. Time was when you had to pump, prime, and preheat a furnace before it would really get started. With the modern convenience of liquid propane gas, that nuisance is gone forever. The pressure is already in the tank. All you do is turn the valve and hold a lighted match over the orifice — and instantly you have a strong, steady flame! Order a complete set of Mutual liquid propane gas equipment — or start with just the pieces you need. See Automatic Electric's big new supply catalog for details.

## The hammer that never "loses its head"



Nor does the new Estwing Lineman's double-face hammer ever "fly off the handle." The reason is that the head and shank are molded out of one solid piece of fine tempered tool steel. The head *can't* come off — and the handle won't crack; you save time and money replacing loose, broken, or splintered handles.

Like all Estwings, the Linesman's hammer is perfectly balanced with just the right hang for steadier work without tiring. Handle is covered with genuine sole leather washers for a comfortable, non-slip grip.

**Cat. No. S-4573** **Each $2.50**

## Buy Automatic's *Approved* Supplies

Automatic Electric maintains a complete stock of *approved* supplies in all its warehouses. Whether it's nuts and bolts, or body belts or reels of messenger strand, we have them. And more than likely we can deliver right off the shelves — with no "back orders" to trickle in and cost additional shipping charges. Next time, order from Automatic Electric the *complete* source of supply.

Prices are F.O.B. Chicago and subject to change without notice.

**Recommended and Sold Through Our Distributors**

**AUTOMATIC ELECTRIC**

Distributors in U. S. and Possessions: AUTOMATIC ELECTRIC SALES CORPORATION
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.



XUM

Note / *Our long experience in working with both utilities and the public is your assurance of dependable work and good customer relations.*

# Bartlett scientists lead in tree research . . .

*First*
to introduce a complete, balanced shade tree food—"Bartlett's Green Tree Food"—and to devise feeding through holes in the ground.

*First*
to use power spray equipment for shade trees and to develop a practical method of reinforcing weak trees with eyebolts and cable process.

*First*
to produce a satisfactory flexible material for filling tree cavities. "Flexifill" has almost the same expansion coefficient as wood.

*First*
to introduce a special type of "Heal Collar" to expedite the growth of smooth, even new bark over the filler used in cavities.

*First*
to develop the "Invigorator Process"—sub-irrigation of shade trees with liquid food and conditioning chemicals under high pressure.

*First*
to maintain Tree Research Laboratories with a highly trained staff of nationally known scientists to study shade tree problems.

*First*
to successfully control one specific disease of trees by the use of chemicals introduced directly into the sapwood of the tree.

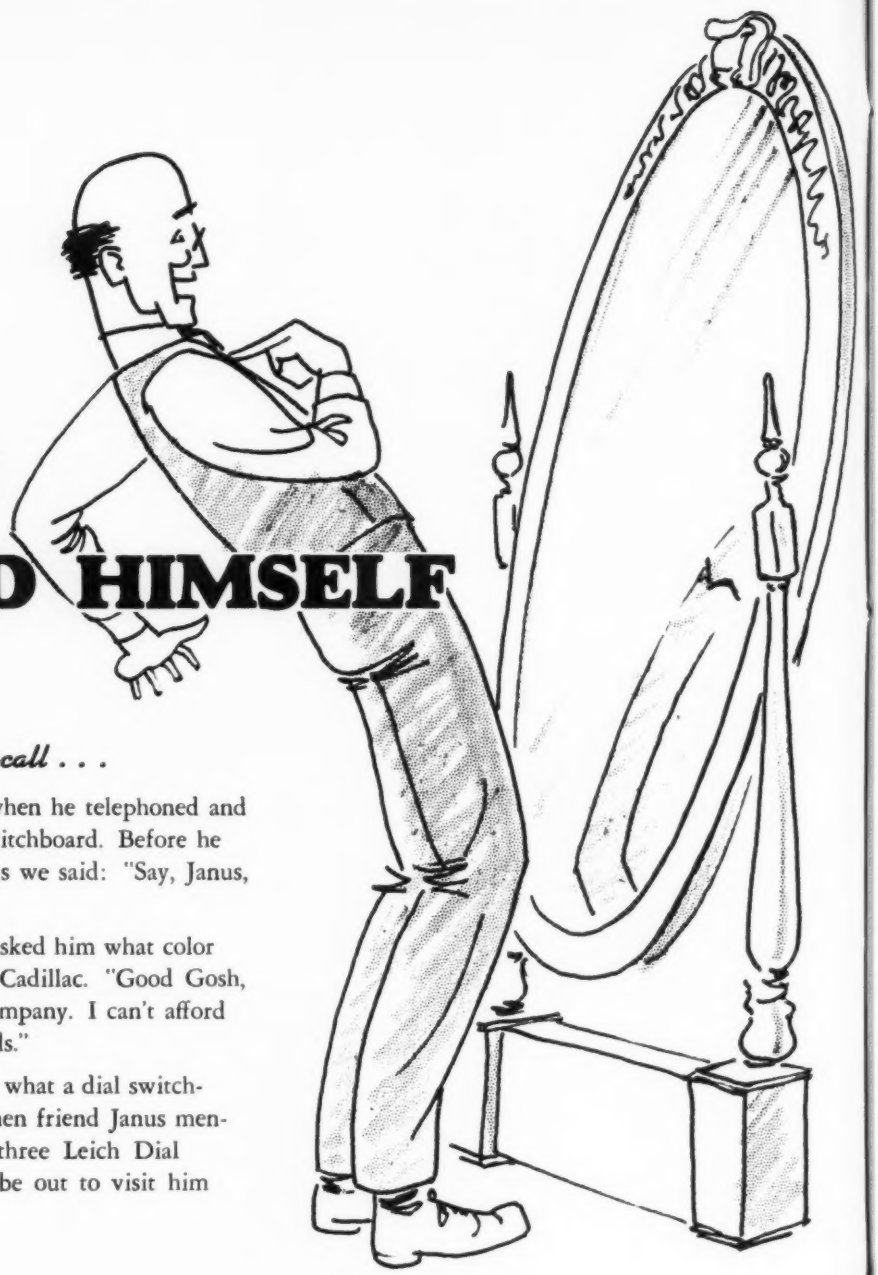
The list of "firsts" will never end at the Bartlett Tree Research Laboratories. Here, scientists are continually searching for new and better ways to protect the shade trees of America. When you consult your local Bartlett representative, you get the benefit of not only his local, native talent, but you also get the benefit of the combined scientific knowledge and long practice of a group including some of the leading authorities in tree health and protection. Small wonder those critical for results are turning to the Bartlett Way—the Scientific Way. Call the nearest Bartlett Office for a study of your tree situation.

The Bartlett Way

# BARTLETT TREE EXPERTS

Home Office, Research Laboratory and Experimental Grounds, Stamford, Conn.
Local Offices from Maine to the Carolinas, and West to Indiana.
See your Local Telephone Directory for Local Address.

# HOW JANUS JOHNSON SURPRISED HIMSELF

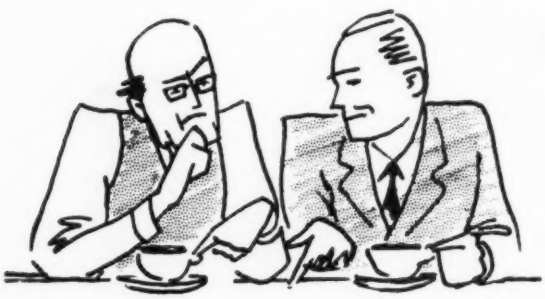


*It all started with a telephone call . . .*

We surely startled Janus Johnson when he telephoned and asked for a price on a new magneto switchboard. Before he could half finish his list of specifications we said: "Say, Janus, how about converting to dial?"

Good old Janus acted as if we had asked him what color he wanted the upholstery in his new Cadillac. "Good Gosh, man," he said. "You know my little company. I can't afford one of those expensive dial switchboards."

So we asked Janus if he had an idea what a dial switchboard would cost for his exchange. When friend Janus mentioned a figure that would buy him three Leich Dial Switchboards, we told him we would be out to visit him next week.



*Janus doubts his own ability.*

After an inspection trip through his outside plant and three cups of coffee, we told Janus how much a new magneto switchboard would cost. Then we told him how much a Leich Dial Switchboard would cost for his exchange.

He was amazed!

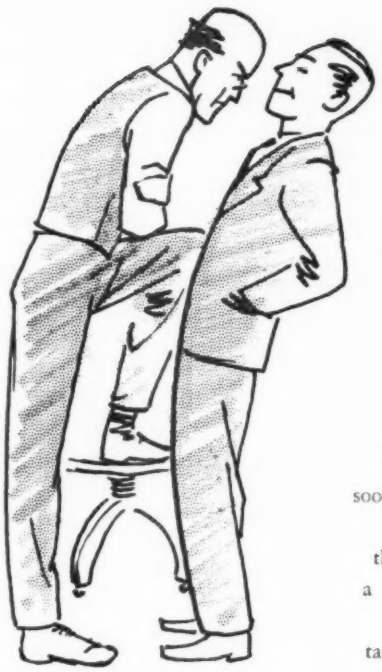
"I thought sure that a dial switchboard would cost more than this. This sounds like it might be possible."

"Just a minute, friend," we said, "You'll have to metallicize your outside plant."

That didn't scare him one bit—"I've been wanting to do that for a long time," Janus said. "You know that won't cause me too much trouble. But look! I don't know anything about this equipment. I wouldn't want to have to pay somebody to come in and take care of my switchboard, even though I would be saving operators' wages and getting higher rates."

So — throughout the lunch hour we told Janus how other folks, good telephone men like himself, came into our factory and got free training and were able to do a really fine job of maintaining their Leich Dial Switchboards.

LEICH



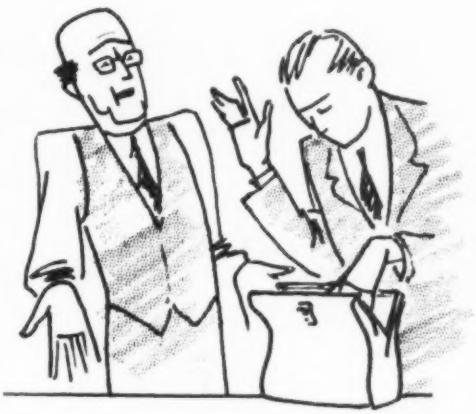
## *Janus proves he's from Missouri*

The main thing we like about Janus is his honesty. He looked us straight in the eye and said: "Well, if I could convert to dial, how do I know this Leich Dial System is the best one for my exchange?"

This was the most fun of all. We went, along with Janus, for a quick trip and saw a number of Leich Dial System installations. Janus gave the exchange managers the complete treatment — he asked hundreds of questions. When it was all over he admitted that these Leich users had sold him on our equipment much better than we could have done.

## *Money - - - always a problem*

Then Janus brought up the question that sooner or later has to be considered. "Where" he said, "do you think I'm going to get this kind of money?" We told him about a dozen different Leich Dial System owners who had solved this same problem. We talked about the different sources of financing and how each company managed to find a way. Janus said he'd look into the money angle, and we returned to Chicago.



## *Good News!*

We could almost see friend Janus smiling when he telephoned. "Guess what — I've arranged for a loan! I'm all set! When can we get started?"

When we asked Janus if he had much trouble in obtaining his loan he said "No." He was surprised and happy at the fact that everybody involved was behind him one hundred per cent.

## *Happy Ending*

So — Janus signed up to buy a Leich Dial Switchboard, and by the time the switchboard was ready to be shipped he had his outside plant in tip-top shape and had become throughly acquainted with the maintenance and operation of the switchboard at the Leich factory.

We sure enjoyed visiting Janus last week.

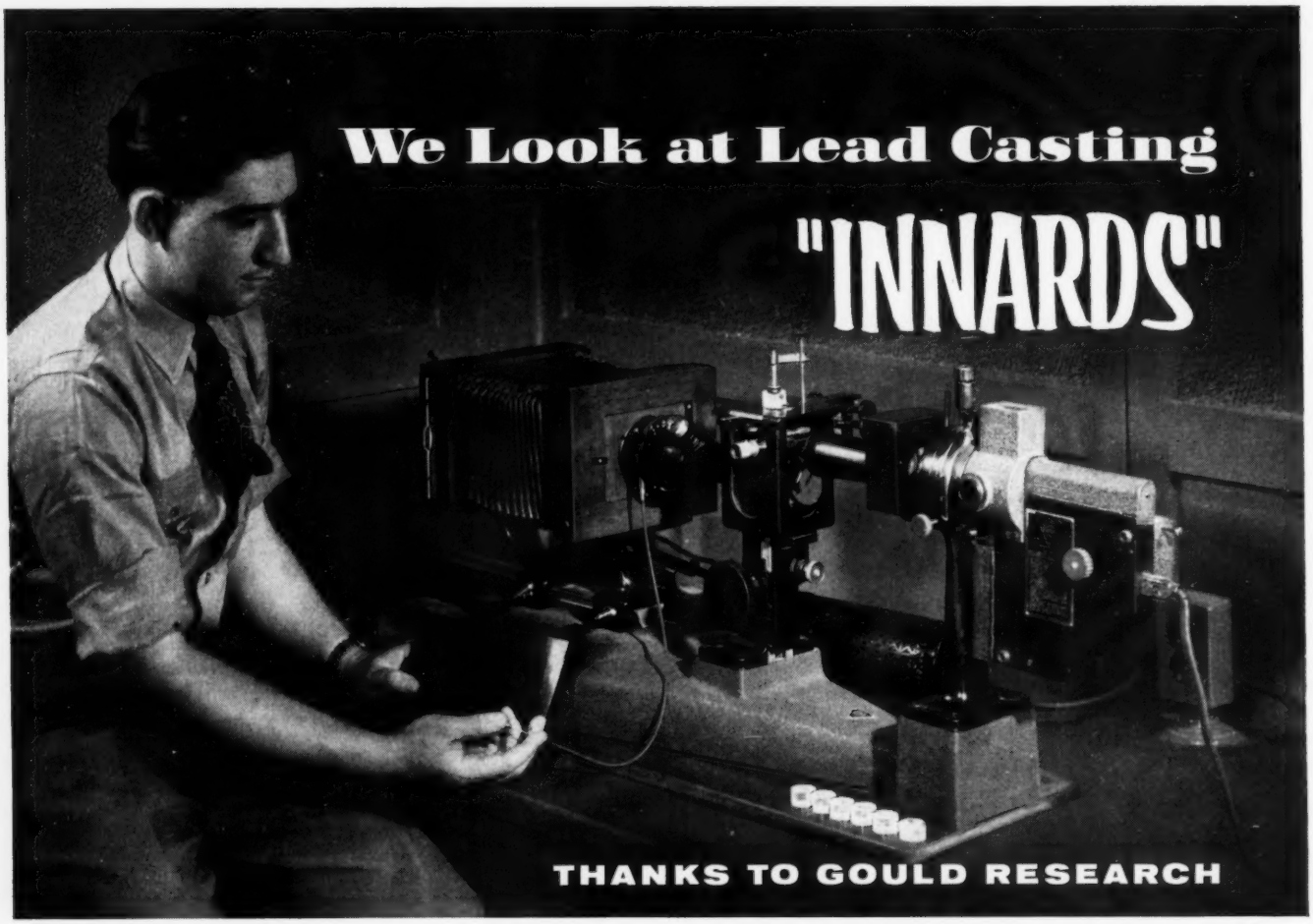
"Can you imagine," he told us, "me, Janus Johnson, only a year ago with my little magneto exchange that wasn't going anywhere? Now I'm giving first rate dial service, getting better rates, having no operator problems. I can hardly believe it but there hasn't been enough trouble on the switchboard to make me worry even a little bit. Why the people in town even think I'm a big shot. I'm sure glad you talked me into this before I bought myself another magneto switchboard."

***Really Folks!*** We don't have a customer named Janus Johnson . . .but he's very much like a number of good Leich customers who have come up from magneto to dial service.

It's been fun working with all of them, and we'd like to suggest that we would enjoy, in the same way, working with you.

**MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 1907**
**LEICH SALES CORPORATION 427 W. RANDOLPH STREET CHICAGO 6, ILLINOIS**
PACIFIC COAST: 2611 SAWTELLE BLVD., LOS ANGELES 64, CALIF. SOUTHWEST: 1227 SLOCUM ST., DALLAS 7, TEXAS

GENERAL SYSTEM




## TO GIVE YOU PREDICTABLE
# BATTERY PERFORMANCE

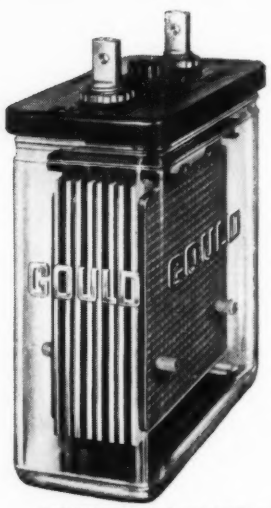
Only by looking at its "innards" can the life expectancy of a lead casting be determined. The Metalloscope in Gould's research laboratory enables Gould engineers to do just that.

A combination high-powered microscope and camera, the Metalloscope provides highly magnified photographs of metallic crystalline structures. It played an important part in developing the amazingly strong, long-life Gould Grids.

Continuous research makes every Gould battery a better battery. You'll save money by specifying GOULD.

*For the full story on Gould research, send for Booklet 749.*

**"BETTER BATTERIES THROUGH RESEARCH"**




America's Finest!
GOULD PLANTÉ
The Aristocrat of
Stationary Batteries

©1955 Gould-National Batteries, Inc.

**GOULD**
**Batteries**

**GOULD-NATIONAL BATTERIES, INC.**
**TRENTON 7, N. J.**

*Always Use Gould-National Automobile and Truck Batteries*

# POWER EQUIPMENT

## for Telephone Central Offices

**By C. H. ACHENBACH**

SPECIAL SOURCES of power are always necessary in central offices. This power usually consists of 24, 48, and 130 dc voltages; ac ringing current, tones, signals, and interrupters. This power may actually be broken down into three main parts.

(1) Ringing, tones, signals, and interrupters.
(2) Common battery (24, 48, 130-volt, etc.)
(3) Reserves (batteries and gasoline or diesel engine sets).

The cost of power supplies in the Bell System, as compared with the total cost of central office equipment, varies with the size of the office. In large multi-unit offices of from 10,000 to 40,000 lines, the cost of the various power equipment will be approximately 5 per cent of the total cost of the office. This percentage increases as the number of lines in an office decreases. In small community automatic offices having 50 to 500 lines, the cost of the power equipment may run as high as 35 per cent to 40 per cent of the total cost of the office.

The ringing tones and signals are usually considered the most complicated part of the over-all power equipment. The cost of this equipment will amount to about 10 per cent of the cost of the main common battery dc power plants in the larger offices. There again, the cost of the ringing equipment increases as the size of the office decreases.

In the Bell Telephone Laboratories there is a power group consisting of some 50 engineers and 20 technical assistants whose sole duties are to develop the various power equipment used throughout the Bell System. In developing these equipments the power design engineers work closely with the designers of telephone equipment. They also keep in touch with the engineers of the operating telephone companies. In this way, proper voltage limits are agreed upon, the current drains are evaluated so that the size of the power units may be selected to care for the initial installation and subsequent additions, and suitable alarms and reserves worked out. The operating telephone companies are more interested in the operation and maintenance of the equipment and its serviceability. Field engineers are assigned to each operating company to determine how the power equipment functions. When troubles are encountered in the field, necessary corrective action is taken on existing as well as new jobs.

**FIRST OF A SERIES**

**This is the first of a series of three articles discussing power equipment of telephone central offices. In view of the fact that such equipment represents an important part of the total cost of central office equipment the information contained in these articles should be of vital interest to all telephone companies.**

Power supplies of various types are standardized for system use, thus greatly reducing the engineering effort required by the telephone companies in specifying the proper equipment, reducing the engineering and manufacturing cost of the supplies.

Power equipment is a very important part of the office and should be made as reliable as possible within reasonable cost. The failure of a relay or switch in the central office may put only a small portion of the office out of service while the failure of a power supply, which is common to the office, may put the whole office out of service. For this reason, batteries are usually furnished to act as a reserve for the dc power equipment in case of failure of commercial power or battery charging equipment. Batteries are the most dependable of the power apparatus used in central offices and have proved over the years that seldom is a central office put out of service due to failures of commercial power or associated equipment.

Ringing, tones, and signals being of different voltages and frequencies cannot use batteries for reserve. Therefore, when the cost can be justified, reserve ringing equipment is furnished and arranged for automatic transfer from the regular to the reserve set in case of failure of any part of the ringing and tone equipment. The reserve ringing equipment must be capable of operating from the battery, since the majority of the failures would occur due to the loss of commercial power. The regular ringing plant can usually be operated from either commercial power or from the dc power plant — in general, to reduce power costs it is operated from the ac commercial supply. In case there is no reserve ringing plant such as might be found in small offices, the regular ringing equipment is operated from the battery.

There are many thousands of telephone central offices throughout the United States, and for every large office you will find scores of small ones. For this reason and due to the cost

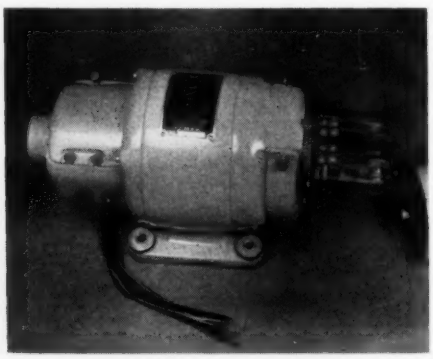
and complexity of the ringing plants, they will be discussed first.

Let us start by saying that it is quite difficult to determine the actual ringing drains required for a particular office. When measurement of the ringing drains have been made, it is usually considerably less than the calculated drains for the office involved. On the basis of many such cases, the engineers making the studies have been somewhat less conservative and are now approximating the actual drains. Seldom have cases been found where the ringing generators were undersized. This is especially true since the size of the ringing equipment is usually furnished for the ultimate capacity of the office and in the meantime, telephone manufacturers have been developing more efficient ringers, having higher impedance and using less current, which have been used for additions.

All in all, considerable guessing is usually necessary in selecting the size of the ringing generator and it is a reasonably safe bet that it will be from 25 per cent oversized—up to four or five times as large as required. You can inspect almost any fully equipped central offices and find ringing machines running at 25 per cent load even during the busy hours.

Another factor that is very important is the voltage limits of the output of the ringing generator. You can buy a ringing device, having wide voltage limits, for a few dollars less than another device having closer limits. Then, hundreds of dollars can be spent through the ensuing years trying to keep the ringers in adjustment so that they will operate satisfactorily. The voltage limits need not be exceedingly close, just reasonably so—say in the order of plus or minus 5 per cent instead of 15 per cent. Close voltage limits are important only on long subscribers' lines.

A ringing plant consists of an alternating current supply of certain frequencies and voltages; one or more tones and interrupters for code or party line ringing, audible ringing, busy back, etc. The apparatus for generating these signals is only a part of the ringing plant. The provision of safeguards to insure reliable service, such as alarms, transfer, distribution, etc., is rather complicated.

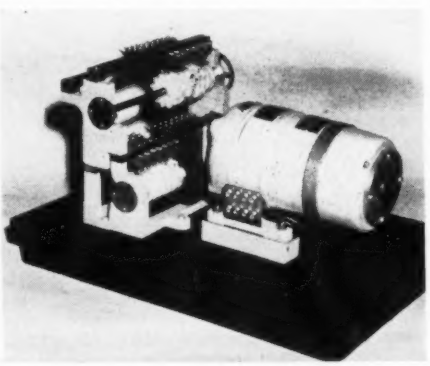


25-watt ringing machine.

Ringing current may be obtained from various means, such as motor-generators, dynamotors, permanent-magnet generators, vibrators, magnetic devices and electronic devices. Hand generators are sometimes used for reserve purposes and for magneto central offices which are now rapidly disappearing from the picture.

In choosing a ringing generator, it is well to keep several thoughts in mind and one of these is to select one that will be the most economical in the long run. However, this may not be the cheapest in first cost. Reliability should be the number one objective. Next should come the maintenance or operational cost and the efficiency of the device. Bear in mind that one watt per year of commercial power will cost about 25 cents and if battery operated, about 35 or 40 cents per year. In unattended offices, where a maintenance man must be sent whenever a trouble occurs, the cost of the trip can be expensive. It is estimated by some companies that each unscheduled trip to an unattended office costs about $20. It has been one of the unwritten rules that anything that you can save in maintenance or power consumption, you can afford to spend six times that much extra in first cost.

Since the amount of power used in operating the ringing equipment is small in comparison to that used in the common battery power plant, it would still be worth while to take a look at the efficiencies of the different devices. The maintenance of the equipment is even more important since not only do you have the cost, but when failures occur you can lose part or all of an office. A trouble-free ringing generator or nearly trouble-free one may be cheap at double the price of one prone to trouble.



Motor driven interrupter.

The following is a list of some of the different devices used for obtaining ringing, tones, and signals, with some of the pros and cons concerning them.

*Ringing Vibrators.* Ringing vibrators have been furnished as a source of ringing current since the earliest days of the telephone along with rotating ringing machines. They operate on the basis of a door bell or buzzer with a number of refinements, the re-

## ABOUT THE AUTHOR

**Mr. Achenbach has had 42 years' experience in the engineering and developing of telephone central office equipment.**

**He began his telephone career in 1913 when he became associated with Western Electric Co. in Chicago. In 1920 he was transferred to New York where he went with the engineering and development division of Western Electric, which later became Bell Telephone Laboratories. In New York, Mr. Achenbach worked as an equipment engineer and had charge of a group of engineers who analyzed telephone company orders to Western Electric for central office equipment.**

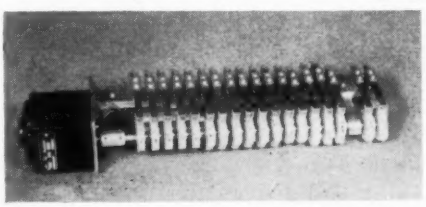
**In 1931, he was transferred to the Power Plant Development Department, having charge of a group that designed power plants for central offices. In 1944, he was promoted to head of the Power Plant Development Department. Here he was in charge of 45 engineers and 15 technical assistants.**

**He retired from the Bell System in 1953 at his own request.**

finements becoming quite numerous over the years. One advantage of vibrators is their reasonable first cost. To obtain maximum life it is necessary to furnish suitable contact protection. Condenser and resistance networks are necessary to reduce the interference to radio and television sets in the vicinity of the central office housing such devices.

Vibrators give a rather peaked wave and the peak voltage, unless filtered out, may rise to undesirable heights. A sine wave is preferred and a flat topped wave even more desirable. One hundred and fifty volts and above is considered hazardous to operating personnel and the peak of many types of ringing generators may rise above this figure during light loads and high line voltages. The peak of a sine wave of 110 volts is approximately 150.

Operating telephone companies have been extending the length of their subscriber lines and this requires that the ringing voltages should not drop below a specified level. Either the ringing voltage range must be increased or closer voltage limits of the ringing

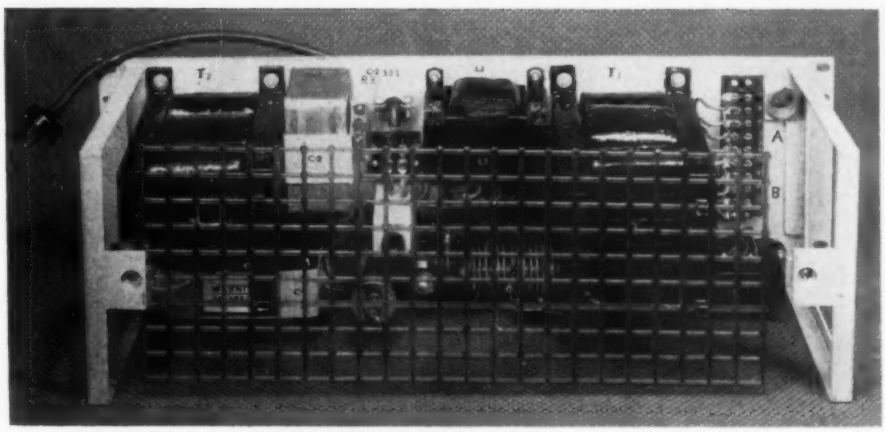


**Motor driven tone generator and interrupter.**

generators obtained. It is preferable that closer voltage limits be used.

*Rotating Ringing Machines.* There are several good types of rotating ringing machines. In the larger sizes it has been customary to furnish a two-unit motor driven generator. These units are more expensive than single unit machines having a common field, but have the advantage of being able to use voltage regulators to hold the ringing voltage to rather close limits. This close regulation has been used for years in larger central offices. When larger sets are furnished, it is customary to provide an ac motor which operates from commercial power. The reserve or standby set usually has a dc motor driven from a battery. Transfer from the regular to the reserve set is accomplished automatically whenever there is a failure in the output of the regular machine.

In the smaller offices, single-unit ringing machines are usually provided since they are somewhat cheaper than the two-unit machines. They may be operated from either ac or dc sources of power. In many small offices, where only one machine with no reserve is furnished, it is operated from the battery.

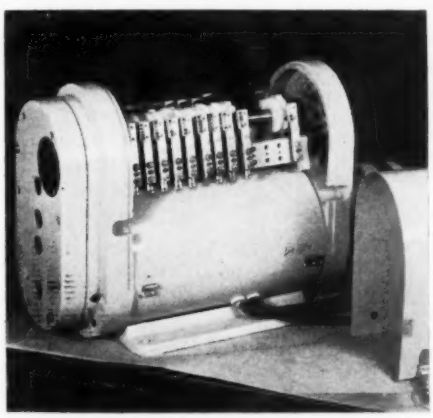


**Static type ringing generator.**

With single unit machines having a common field, inherently any variation in the input voltage results in a proportional variation in the output voltage. This is in addition to the voltage variations due to load changes. It is not practical to build regulation of the output voltage into the machine. It can be regulated by a brute force electronic or magnetic device which is rather expensive. To reduce the power drains, machines with Alnico fields are often provided. With careful design, fairly good inherent regulation may be obtained with this type machine. Regulation in the order of plus or minus five per cent can be obtained with such machines, which is satisfactory for most applications.

In offices where the calling rate is low enough to warrant, the machines can be operated on a START-STOP basis, i.e., the machine is started up whenever a call is originated in the office. The saving in commercial power can be considerable and more than offset the added cost of necessary additional control equipment.

Ringing machines are quite reliable where good design and workmanship is used in their manufacture. However, since they are used over a period of many years, a certain amount of maintenance will be required.



**1-ampere ringing machine equipped with tone generctor and interrupter.**

*Magnetic Devices.* Magnetic devices are used in many cases to provide ringing current. These devices use commercial power of 60 cycles to obtain the proper ringing current and frequency. They are a very stable and serviceable unit of equipment and, if properly designed they can provide satisfactory voltage outputs of close regulation. Decimonic frequencies (20, 30, 40, 50, 60-cycle) can be economically obtained from these devices. The harmonic and synchronic frequencies are more difficult and costly to produce.

These devices are long-lived and require little or no maintenance. They can be operated only on ac and it is necessary to have some form of reserve in case of commercial power failure. A standby of dc operated ringing machines or vibrators may be used, or an inverter driven by the battery may be utilized to supply 60-cycle power to the magnetic ringing generator. In this case, a speed regulated inverter may be used since the magnetic generators are somewhat sensitive to variable frequencies, as are subscribers' bells.

The static ringing devices of the future, however, will probably not be the magnetic ringing devices operating from ac, but may be a combination of the magnetic and transistor type operating from the central office battery. AC ringing frequencies will likely be obtained from dc by the use of transistors. The output voltage will be controlled magnetically. Such a device will be economical, have a long service life and high efficiency. It also should be possible, within a certain range, to vary the frequency by means of a potentiometer, the limit of change being controlled by the magnetic portion of the device.

Some work has already been done on such devices and they appear to have a promising future.

*Electronic Devices.* Ringing current may be generated by the use of vacuum

*(Please turn to page 44)*

by FRANCIS X. WELCH WASHINGTON EDITOR

**FCC chairman wants special study of radio-TV situation. IRB rules excess rate collections taxable. British Columbia commission to regulate cemeteries. Further developments on wire-tapping hearings.**

SCARCELY had the Senate approved the nomination of Chairman George C. McConnaughey (to a full-term Federal Communications Commission membership), when the Senate Interstate and Foreign Commerce Committee had him right back on the carpet over another matter. Senator Magnuson (D., Wash.), chairman of the Senate committee, is unhappy over the way the "ultra-high-frequency" (UHF) television station applications have been folding up. So, also, is the FCC.

The Senate committee now has two reports on this situation, from two aides respectively (Democrat Plotkin and Republican Jones). Both recommended, in a general way, about the same thing—that the only practical course for the FCC is to promote a balanced allocation plan utilizing *both* UHF and the more popular and widely used "very high frequency" (VHF) channels. Chairman McConnaughey agreed with both reports, but noted various other complications.

For example, only about one out of seven of the 35 million television sets, now being used by the American public, can even receive UHF programs, if they are ever put on the air in the city areas now served by VHF. And only one out of five of all the new sets being manufactured is capable of receiving UHF programs. Furthermore, there is the question of developing very expensive color television. The relatively few rich sponsors willing to pick up the tab for this de luxe type of program are not going to be interested in fooling around with poorly patronized UHF "barnyard" stations. They will want to concentrate on as broad and as established a market as possible, which means, almost exclusively, the existing VHF stations.

So it's all very difficult. And Chairman McConnaughey wants the FCC to do a special study into the whole radio-television situation with a view to overhauling general regulatory policy if necessary. He says it would take about a year and quite a bit of extra money. So far the Budget Bureau and appropriations commmittees in Congress have been cool to the idea, for reasons of general economy. But McConnaughey thinks Congress should, by resolution, set up special authority (and special funds) for the FCC to do this job.

Senate Committee Chairman Magnuson ahemmed, and said that his group would have to wait and see about this —at least until after his committee has made its *own* investigation and proposals. He added that he recognized the generalized natures of some of the comments made by the FCC and he would expect it to spell out its plan in more detail, when the FCC members appeared before the Senate committee. But he emphasized that the whole thing is terribly important and that the great investment the people of the nation have in their television receivers should be protected, as well as the more than "4 billions of dollars" that are involved in television advertising and servicing, and in operating television equipment.

FCC Commissioner Hennock had her own ideas about all this, as is her custom. More will be heard from this front, to be sure. But that's about where the matter stands, as Congress takes a recess for Easter.

#### Excess Rate Collections Taxable

The Internal Revenue Service made a ruling recently in connection with a question posed by an electric company which should interest all public utilities in these days of multiple rate cases. In a word, the question was this: Could revenues collected by the utility, under bond, in excess of approved rates (during a period of a rate dispute between the company and the regulatory commission) be taxed as income when received? The excess revenues collected in this case had been held in a restricted bank account.

The utility company pointed out that such restrictions interfered with the use of such funds for general income purposes, and that they might never actually be realized as usable income if the rate case was finally decided against the utility company. The commissioner of internal revenue decided nevertheless that such excess revenues were actually taxable when received, despite the restrictions on the bank account.

Without disclosing the name of the utility company which was the taxpayer, the facts in this case were substantially as follows: In 1951 "X" electric company filed a new schedule of electric rates with the state regulatory commission. The state commission immediately suspended the taking effect of the rates filed, and in 1952 issued an order that the schedule of rates filed by the company be disallowed and disapproved.

By the same order, the authority ordered the company to file new rates higher than the rates in effect, but less than the rates disapproved. The company filed a bill of complaint in court for a stay of enforcement of the order, and after a bond was filed with the court, the court granted a stay of the order issued by the regulatory commission and permitted the schedule of rates filed by the company in 1951 to become effective, conditioned upon refund by the company to its customers of any amounts collected in excess of the amounts collectible under the schedules ordered by the regulatory commission in the event that such schedules were later determined to be valid.

The electric company proceeded to collect from its customers thereafter in 1952 and in 1953 at the rate permitted by the court. The surety company, which executed the bond in the electric company's behalf, required the company to deposit in a special bank account, subject to the joint control of the company and of an authorized representative of the surety company, amounts equaling the collections from customers in excess of the sums collectible according to the rates ordered by the regulatory commission. As of the end of the company's 1953 taxable year, the special account included all of the excess revenues collected under bond during 1952 and 1953, less the amount of income tax paid on such excess revenue for the year 1952.

The opinion of the commissioner in this case was as follows:

"Earnings under a claim of right and without restriction as to their disposition, even though it may be claimed that the recipient is not entitled to retain them, and even though the recipient may still be adjudged liable to restore their equivalent, are taxable income in the year in which received. (Citations omitted.)

"The filing of a bond as security for liability to return excess revenues places no restriction on the use of the moneys collected. See *Commissioner* v. *Brooklyn Union Gas Co.*, 62 Fed. (2d) 505, acquiescence, page 6, this bulletin.

"The fact that a corporation indicated in its account books an intention not to exercise its power of absolute dominion over funds received by it in satisfaction of judgment but subject to be returned to the judgment debtor did not change the status thereof as taxable income of the corporation in the year in which received. See *Commissioner* v. *Alamitos Land Co.*, 112 Fed. (2d) 648, certiorari denied 311 U. S. 679.

"Moreover, the setting up of a separate bank account to receive amounts equalling the excess revenues collected by agreement with the bonding company, did not differ in legal effect from the depositing of any other assets of the company as collateral to secure the bond, nor interfere with the company's exercise of the power of absolute dominion over the full amounts collected from the customers."

In view of the foregoing, the commissioner held that possible excess revenue collections by the electric utility company during the years 1952 and 1953, pending settlement by court order on the question of the disputed increase in service rates, must be included for federal income tax purposes in the gross income for the taxable years in which such excess revenues were received. This, despite the fact that amounts equivalent to the excess were deposited in a special bank account, subject to the joint control of the utility company and the bonding company.

### A Quiet New Field for Regulation

There is something new under the

## REA APPROVES $1,788,000 IN RURAL LOANS

**The REA approved three loans amounting to $1,788,000 for improvement and extension of telephone service in rural areas of Georgia, Louisiana and Tennessee, the U. S. Department of Agriculture announced on Mar. 22.**

**Plant Telephone & Power Co., Tifton, Ga., on Mar. 14 was given an allocation of $740,000 to improve and extend rural telephone service in Atkinson, Colquitt, Cook, Crisp, Tift and Worth counties.**

**The borrower is now furnishing dial service to 678 subscribers over exchanges at Lenox, Omega, Pearson, Warwick and Willacoochee. With the REA loan, the company expects to replace the existing automatic equipment in the Lenox, Pearson and Willacoochee offices with larger facilities, and modify and expand the automatic equipment in the Omega and Warwick exchanges. About 372 miles of new line will be constructed and 41 miles of the existing line rebuilt.**

**The expanded facilities will enable the Plant Telephone & Power Co. to serve an additional 1,176 rural families in the area now without telephones. The completed system will consist of 485 miles of line located in the three non-contiguous sections of the service area.**

**James P. Gleaton is president and manager of the Plant Telephone company.**

* * *

**The Marion-Oak Ridge Telephone Co., Marion, La., on Mar. 17 was granted a loan of $318,000 to improve and extend rural telephone service in Morehouse and Union parishes.**

**The borrower now provides common battery and dial service to 272 subscribers over 80 miles of line. The company plans to use these loan funds to convert the whole system to dial operation, and add facilities to serve 331 rural families in the operating area now without telephones.**

**About 53 miles of the existing line will be rebuilt, and 121 miles of new line added. New automatic central offices for the system will be constructed at Loch Lomond, Marion and Oak Ridge. The Marion building also will house commercial office facilities. The completed system will consist of 176 miles of line.**

**Clarke McRae Williams is president and manager of The Marion-Oak Ridge company.**

* * *

**Ben Lomand Rural Telephone Cooperative, Nollinsville, Tenn., also on Mar. 17 was allocated $730,000, second loan to this borrower.**

**The new loan funds will be used to finance the construction of 468 miles of line and other facilities to furnish modern telephone service to 1,668 subscribers not included in the first loan. The new service will expand the borrower's operating area into adjacent White and Dekalb counties.**

**Ben Lomand cooperative proposes to acquire from the Southern Continental Telephone Co. the Doyle exchange and rural lines near Sparta. These facilities are furnishing dial and magneto service to 196 subscribers over 92 miles of line. About 85 miles of the existing line will be rebuilt and 382 miles of new line added. New and enlarged automatic central offices will be constructed at Doyle and Sparta. The rehabilitation and added facilities will permit the cooperative to offer improved service to the existing subscribers and to serve 1,472 rural families in the expanded area now without telephones.**

**With the two REA loans, totaling $2,215,000, the borrower will be able to provide modern dial service to 4,627 subscribers in Bedford, Coffee, DeKalb, Grundy, Marion, Rutherford, Van Buren, Warren and White counties. Automatic central offices for the enlarged systems will be at: Beach Grove, Beersheba, Hillsboro, Laager, McMinnville (rural), Monteagle, Pelham, Rock Island, Tracy City and Viola, in addition to the two new ones at Sparta and Doyle. The completed system will consist of 1,082 miles of line.**

**R. B. Miller is president and William S. Slusher is manager of the Ben Lomand company.**

sun — or should we say — under the ground? Cemeteries in British Columbia have been declared to be public utilities under commission regulation. Apparently this is the first instance in either Canada or the United States where cemeteries have been so classified by statute. A new law of the province requires that cemeteries and crematories shall not be started or enlarged without certificates from the public utilities commission, with which ground plans must be registered.

The British Columbia Public Utilities Commission must also make regulations regarding burial, disinterment, removal, and disposal of remains, the fixing of rates for lots and care of same, and other services. The basic British Columbia Public Utilities Act requires that rates be based upon a "fair and reasonable return upon the appraised value of the property of the public utility used, or prudently and reasonably acquired. . ." It also requires regulation of accounts, security issues, consolidations, mergers, sales, and standards of service and safety of operation.

A careful search of both American case law and statutory laws, discloses no precedent for this or even a similarity in any of our state practice. In addition to the conventional forms of regulated utilities — carriers and communications, gas, electric, and water—various states of the Union have placed quite a few miscellaneous enterprises under what Justice Douglas of the U. S. Supreme Court once called the "filagree variety" of public utilities. There are cotton gins in Oklahoma, and other southwestern states; there are clam digging preserves in Massachusetts, and there are central heating, petroleum pipelines, water and airborne taxicabs under utility regulation —but nothing *even in the nature of* cemeteries.

About the closest American practice comes to that (and it is not very close at all) is warehouses, which are regulated by the public utilities commission in a number of states, usually as an adjunct of railroad regulation. In fact, one of our state commissions (Minnesota) has the official title of "Railroad and Warehouse Commission."

Without getting too irreverent about such a grim subject, we can see that applying conventional utility regulation to cemeteries is going to involve some interesting, if not difficult, questions. How would you figure depreciation, for example, on a setup such as a cemetery? How would one go about drafting a classification of accounts as between "plant," "operations" and "overhead"? This is certainly not a dead issue.

"Yes, the house has telephone extensions upstairs, in the kitchen and basement. Now would you care to see it?"

The British Columbia commission has its job cut out for it. But such is usually the penalty which goes along with the rewards, if any, of the ground-breaking pioneer.

### More on Wire Tapping

There is a man up in Danbury, Conn., who says he has invented a tap-proof telephone cable, and that it is already patented and used strictly for federal government work. It is a good bet that Attorney General Brownell wished there were more of such cables in use, considering the headaches he has to go through, these days, before the House Judiciary Committee over proposed wire-tapping legislation.

Last week a subcommittee, headed by Representative Celler (D., N. Y.), who is also chairman of the full committee, and other members of the subcommittee began throwing questions at one of Mr. Brownell's principal assistants. The questions had to do with the FBI (G-men) and how much they tap wires and for what purposes.

The witness was Assistant Attorney General Warren Olney, a distinguished-looking gentleman of the law, with a strong resemblance to Ronald Coleman. Mr. Olney, head of the Justice Department's criminal division, was in the unusual and uncomfortable position of being on the receiving end of a third degree. What's more, he wasn't talking much. The Congressmen wanted to talk about FBI wire tapping.

It is "no secret," said Mr. Olney, that the FBI taps wires with Mr. Brownell's authorization as established by law. What law, the Congressmen asked? Mr. Olney had to fall back and regroup on that one. The answer finally came: "Administrative law . . . inherited from past administrations," which Mr. Brownell "cannot reverse." Why not, the Congressmen wanted to know. If administrative officers of this and previous administrations could make "administrative law" for themselves, why couldn't they reverse it?

Mr. Olney thought about that for a minute and said that Attorney General Brownell and some of the Democratic attorney generals before him had seemed to agree that tapping was "a good practice" as long as it was done the way the FBI did it, under strict controls.

Then, he commented on the rumors that the FBI agents had been running wild with wire taps for years and years. He said it was not so. "All I know about that," said Mr. Olney, "is Hoover's (head G-man, J. Edgar) own testimony . . . at no time even during the war years have the number of FBI wire taps ever exceeded 200 at one time.

Representative Fine (D., N. Y.) wanted to know about the rumor floated during the House consideration of a wire-tapping bill last year. The rumor was to the effect that a bungled wire tap on the telephone of a Senate Public Works Committee member in 1951 had caused a power failure. Mr. Olney was sure, "positive as I'm sitting here, that not a single one of them was authorized or ever attached by the FBI."

He added that what wire tapping the FBI does, and who supervises it, is all a matter of record. But it all has to be kept secret between Mr. Hoover and the attorney general. Even Mr. Olney and other attorneys of the Justice Department in the criminal division have no access to the results of an authorized FBI wire tapping, unless it is cleared through the top desk.

The Congressmen did not seem entirely convinced, and Chairman Celler said he had a lot more questions to ask. Anyhow, Mr. Olney made it clear that the attorney general is not in favor of any of the five bills on wire tapping now before the House committee, which would limit the practice to court-approved orders, affecting crimes or suspected crimes dealing only with the national security (treason, sabotage, espionage, kidnaping, etc.).

It is pretty certain that Attorney General Brownell is anxious to have the authority more accessible to the attorney general, without so much red tape about court orders and so forth.

At the rate the hearings are going, it now seems a fair bet that there will be no more final action on a wire-tapping bill at this session than there was at the last session. Maybe the FBI which now admittedly taps wires under "administrative law," is willing to leave it that way, instead of tackling a very much unknown quantity which might emerge from the House Judiciary Committee.

# MERCHANDISING

## *Telephone Services*

**By W. K. MOSLEY**
**GEORGIA MANAGER**
**Southern Bell Telephone & Telegraph Co.**

**Selling extensions is a job all telephone employes can help with. In Georgia, Southern Bell installers are making a good accounting for themselves by taking advantage of every opportunity to sell the housewife an extension while installing a main telephone or making a move or repair. Favorite technique, as shown above, is to take an extra telephone, preferably a wall set or a colored telephone into the customer's home and do a little point-of-contact demonstrating and selling.**

THE SUBJECT matter I am going to discuss is an exciting one. We haven't been in a position to talk about it very much during the past 14 years; all of us in the telephone industry have been too busy just keeping up. In fact, the word "selling" in its larger sense has all but disappeared from the telephone lexicon.

We have been selling ourselves, of course. We have of necessity been greatly active in selling to the public general acceptance, understanding and appreciation of our problems in expanding at a record pace and in financing on record levels this expansion in the face of record costs. We have had to beg the public for patience and encourage the public to use most efficiently available services.

But the telephone industry . . . . has just about caught up. In general, held applications have dwindled. In many places we are on a current basis. In most other exchanges we should be on a current basis before too long. I say this with some reservations, for if we should experience any considerable upward rises in our economy, we might find ourselves beset once more with a held application situation.

I think that we can all be proud of the fact that since 1940 we have almost tripled the number of telephones serving the state and have increased the number of Georgia families with telephone service from 22 per cent to 55 per cent. We can also be proud of the fact that in rural areas of the state the number of telephones has grown from a negligible to a sizable segment of our total telephones.

### Profits in the Business

As background to my discussion of merchandising in the telephone business I would like to discuss the profits of the business a little. Telephone companies, since public regulation of them began, have been continually in a squeeze between regulated rates and declining business and surplus plant in bad times, and between regulated rates and high cost of plant in inflationary times. We've often been in a position so difficult for the average person to understand, of going downhill while we were going uphill, of making less profit on more business. Seldom have we been able to convince enough people of this paradox to be in a reasonably comfortable earnings position for very long.

If volume could have done this, Southern Bell would be in an excellent position. In Georgia alone we have spent almost 200 million dollars in the past nine years on gross additions to our plant and have increased our number of telephones more than 130 per cent and have almost tripled our number of long distance circuits. These figures look awfully big, but the percentage of return on investment has been disappointingly low.

### Operating Efficiencies

So, to keep ourselves in position to fulfill sufficiently our obligations to our stockholders so that they continue to find us a good investment and to keep ourselves in a position whereby we can attract vast sums of new money from the savings of both old and new investors, we have had to pay close attention to operating efficiencies in our business, to getting more done for relatively less money.

This has meant greater mechanization, both in local and long distance operation, which has put us in a position of having to raise even greater amounts of new money than we would have for the expansion of existing manual systems. So we have more exchanges going dial and the great expansion of our long distance dialing network, which at present is the province of operators, but which is being developed so that our customers eventually will dial most of their long distance calls.

In regard to customer long distance dialing, the Bell System has been experimenting with such a system for several years at Englewood, New Jersey. Subscribers there in a recent year

dialed 96 per cent of all long distance calls it was possible for them to dial. This system is being expanded to several other Bell exchanges this year. It shouldn't be too many years before we'll be in the middle of this development here in the South. We have no firm dates yet, but the time is close enough for us to see it coming. . . .

The expansion of operator long distance dialing in recent years has helped offset the severe effect of present high cost operation and expansion. In addition . . . . where we have had trouble getting enough operators and where our turnover of operators has been high, it has made it possible for us to handle an increasing volume of long distance traffic without a corresponding increase in our forces. With fewer inexperienced operators on the board and a great increase in the speed required to place calls it has vastly improved our service as well.

**Must Look to Selling**

Mechanization has not been our only approach to efficiency. We have increased our efficiency in all departments. We feel we are using more efficiently than ever before our manpower, womanpower, materials and equipment. Many of these efficiencies have been suggested by our employes through our suggestion plans; others have been worked out through scientific study and experiment.

Many routine procedures and practices have been streamlined a little or a lot in nearly every phase of our operations. Outstanding changes have been made in traffic procedures. We have made great progress in getting our subscribers to call by number and to make station-to-station calls wherever practical. We have changed our leave-word practice on incompleted person-to-person calls to simplify eventual completion and accounting for these calls. We have eased up, in deference to the time of both our customers and our operators, our former eager efforts to complete a call on its original toll ticket.

But all of these efficiencies have not been enough to keep us earningswise where we feel in a reasonably safe position now, or in the foreseeable future. Therefore, we have had to look to other phases of our business for salvation, leaving increased rates as a method of last resort.

Our approach to selling telephone services has been motivated by another factor: It is part of our business. In our necessity of fighting the battle of supplying unprecedented demands for local and long distance service under the handicaps of regulation, and of having to use all of the new money we could safely raise to satisfy the basic

W. K. MOSLEY

demand, we have had to turn our backs or at least one side to the fact that telephonic communications is today much more than supplying basic local and long distance services. We had no other choice, or course. I sincerely believe that our course of action was the only way out. Devoting time, energy and money to developing services for which little pressure exists when demand for basic services remained unsatisfied would not have been wise.

**Entering a New Era**

However, we are entering a new era in the telephone business, and the Bell System has concluded that in addition to its tremendous drive for more efficiency in its present operations much of its answer to the earnings problem may lie in making telephone communications a great deal more than it has been, first, in expanding existing services, both basic and non-basic, and, second, in creating and selling the public new or relatively new communications it will find useful and desirable.

In connection with the development of newer services I would like to say, first, that no one is better qualified to provide them satisfactorily than our present telephone industry and, second, that if we do not provide them someone else probably will. The potential market already exists. It is up to us to develop new services and to sell them.

Despite all our good reasons and rationalization the fact remains that we find ourselves rather far behind the world of commodities and behind many fields of service in selling the public new usage of old services and new services themselves. In the past nine years, for instance, while we had our hands full of some rather basic and overwhelming problems, a multi-billion dollar industry known as television has been created, has grown up and has come of age. In 1945, there were no television sets except in the laboratories. Today there are about 30 million TV sets in the homes of our nation; these are served by about 400 TV stations with a potential viewing audience of about 110 million people. Not a one of these sets or stations existed in 1945. Then there is the frozen foods industry and deep freezers for the home, and air conditioning which is now in its infancy.

**The Market Exists**

The average American consumer is now spending a sizable part of his dollar for goods and services unavailable to him 10 years ago. Three reasons for this are: (1) He can afford these new goods and services—after fixed expenses, what people have left over in terms of buying power is now four times over what it was in 1940; (2) these goods and services have been available to him; (3) he has been sold on spending his money for these goods and services.

We are fortunate that such an excellent market exists.

From our experience to date we know that the telephone industry can compete with success for a greater share of the consumer's dollar.

Here we run into a concept of developing and selling goods and services that is a way of life in the world of commodities. It is known as "Merchandising." It covers the whole field of product development with all of the problems of design, appeal and selling in mind. It covers the creation of demand through promotion and advertising. It covers the final presentation and sales techniques at the point of sale —and then the follow-up to keep customers coming back.

At Southern Bell we're going into merchandising with enthusiasm. Our success so far has been most heartening. On some of our newer items of service we have seen demand mushroom beyond our ability to keep current with the supply.

I would like to tell you about some of the things we are doing to better merchandise existing and relatively new "products" of our business. The entire field is too broad to cover in detail, so I'll confine my discussion to services which I feel are of greatest importance and greatest interest to the entire industry. . . .

I would like to discuss what I have referred to as basic services—local and long distance. Selling efforts in this connection would apply to any telephone company anywhere that has a

profitable interest in local and long distance revenues.

**Selling Local Services**

In connection with local services I would like to point out that we are paying particular attention to line fill in an effort to get the maximum use of revenue from existing plant.

We are making every effort to give our customers the highest grade of service and to sell them the grade of service they should have. Our activity taking care of waiting lists of unsolicited requests for better grades of service is turning into a program of selling our customers on the grades of service they should have. We're keeping this in mind on all contacts where upgrading is possible and place greatest emphasis on selling a customer the grade of service he should have upon his initial application for service. Upgrading not only helps bring in needed revenues but it often saves operator time, commercial time and customer dissatisfaction by solving party-line problems.

Excellent opportunities for upgrading are indicated by the fact that in Southern Bell territory in Georgia, despite tremendous increases in family income since 1940, residences with straight lines have decreased from 34 per cent in 1940 to 25 per cent today. Two of our districts in Georgia recently concentrated on selling upgrades on a selective basis and sold more than 30 per cent of contacts.

While we are not presently engaged in actively selling new residence service, at least one Bell System company has been successful in selling new telephones by going from door to door in areas where they have sufficient families. In this instance in 12 exchanges 5,800 residences not having service were canvassed, resulting in 1,550 new installations with each salesman averaging 3.4 per day.

When I first heard of this incident I was a little surprised, because I had felt quite sure that most people who could afford telephone service had it if it were available. But it is not too unusual, on second thought, because many of these non-users probably only recently came into sufficient income to afford service, and no one had sold them on its value.

**Selling Long Distance**

Now, let's discuss long distance service. Here, in my opinion, are our greatest opportunities of the present, at least, for revenue development. I don't know of any telephone service that will yield more gold for the digging, and it's a big mine that can stand a great deal of excavation. When you consider the long distance calling volume today and the fact that much of it just grew up with more discouragement than encouragement on our part since 1940, I think you might begin to realize that this is a promising field for revenue development.

Here is where we are getting into our "Merchandising" program in a big way. The product exists in an advanced form, fortunately. Our problem in merchandising it is to develop valuable uses for it and to sell, through advertising and personal counsel, people and businesses to whom it would be useful.

First, in local and national advertising, in displays, exhibits and bill inserts we are encouraging the residential use of long distance. We also have a college program, which we found in the thirties could be highly productive. A list of all students, their parents and their parents' home addresses are obtained from each college in the state. A letter is sent to the parents encouraging them to keep in touch with their sons and daughters at college through long distance. It is suggested that a regular time be set each week for the student to call home. A postcard from the parents to the student is included in each letter with appropriate text for establishing a weekly calling time.

Second, our most intensified sales program since 1940 is being conducted to sell businesses, industries and their personnel and representatives on the profitable use of long distance service. We have 10 men in Georgia working solely on development of long distance usage. In a special school these men were taught the techniques of studying the long distance usage of businesses and business people and of determining how an individual business and its personnel might use long distance more profitably. This corps of salesmen went to work in April (1954). They have been cordially welcomed throughout the state. Businesses and industries have been extremely appreciative of their services and of the enlightened self interest that prompted our firm to provide this service.

**Various Uses of Toll Service**

During their first five months on the job these men contacted 1,120 customers, sold 57 per cent of them plans for increasing their profits by boosting sales or decreasing operating expenses through the use of long distance service. We estimate, and our sales team assures me it is low, that their efforts during the first five months will produce approximately $188,000 in annual revenue. We have a long way to go before covering our own territory, but we will be happy to cooperate with any other telephone company in the state in contacting selected customers. Needless to say, any expansion of long distance usage is of mutual benefit to all of us.

**Directory advertising is an important source of revenue with Southern Bell in Georgia. Directories in more and more of the smaller exchanges are having classified yellow-page sections added. Here a Southern Bell directory advertising salesman discusses the layout of a quarter-page ad with the proprietor of a florist shop who gives yellow-page advertising much credit for her success.**

One thing that constantly surprises me is the many varied ways long distance can be used to aid business and industry in their operations. Some of the stories we hear of time saved, efficiencies effected and sales made through intelligent use of long distance are fabulous. The opportunities exist—it is up to us to seek them out.

While the list of special uses that can be made of long distance is too long to recite here, I would like to men-

tion a few of the ideas with the most profitable possibilities:

First. Systematized method of getting customers to call "Collect." We discuss the matter with the subscriber and point out the readiness with which potential customers might place orders to him by telephone if the calls were free. We implement the plan by providing the subscriber colorful stickers with call collect messages and telephone numbers to stick on correspondence and billings and in certain instances overprint customer's stationery and billing forms with call collect messages and telephone numbers.

For example, a Call Collect Plan was recently developed for an Atlanta heavy machinery company. Every item leaving this place of business carried a call collect message. This includes everything from heavy construction equipment down to the smallest item of correspondence. A preliminary review of this customer's billing indicates that this plan will bring in annually more than $5,000 additional long distance revenue. This customer is very enthusiastic about the benefits he is receiving, although he has not kept a dollars and cents account of what it is meaning to him.

### L.D. Credit Card

The second long distance development item I would like to mention is the Long Distance Credit Card. This card is used in conjunction with a large number of plans involving customers who have occasion to travel. The card will increase a customer's use of long distance by making it more convenient for him to call anywhere from any telephone. We have found, for instance, that traveling men will make many calls from roadside booths where no change-making facilities may be available.

To further make the credit card more useful we offer systematized plans for increasing a salesman's coverage ability. One is called the Skip-Stop Plan whereby a salesman on one trip calls customers in one town and visits them in another and on the next trip reverses the procedure. This permits the salesman to contact more customers and still retain the personal touch in selling.

Another systematized plan is known as the Key-Town Plan, whereby a salesman calls "Now-and-then" buyers from key towns on his itinerary to see if he should make a trip to see them. Using this method a salesman can keep up with a lot of small customers he would normally contact but rarely. These two plans are not new. They have been in use practically since development of long distance service.

**Outdoor telephone booths are an important part of Southern Bell's merchandising program in Georgia. Approximately 1,400 have been installed since 1950 in the state. Plans call for 1,100 more during the next three years. Revenue is averaging about $49 per month compared with $40 for indoor installations.**

However, all salesmen do not know about the plans. Our objective is to see to it that all persons who might use these plans profitably know about them.

### Reverse Charge Service

A third long distance promotion scheme I would like to mention is the Special Reverse Charge Toll Service. Through this service the user has directory listings in distant cities which invite potential customers to call him long distance at no charge through use of a special number. This type listing in certain instances overcomes any resistance the customer may have in placing a long distance call collect. The customer merely calls the special number and the operator handles all matters pertaining to billing the call to the called party. Our customers advise us that this service provides them with the next best thing to a branch office at the distant points. Having had great success with their local telephone ordering program, one of the largest mail order firms in our territory is now experimenting with a long distance telephone ordering plan whereby customers can call direct without charges to centralized catalogue order offices.

This service is applicable and is being used by customers ranging from the small one-unit retail concern up to some of the largest businesses in the country. As an example a lumber supply dealer in a relatively small north Georgia town subscribes to this service in eight small towns within a 75-mile radius. This customer receives from these eight towns an average of 85 to 100 orders per month ranging in size from $5.00 through several hundred dollars. To us it means additional long distance revenue of approximately $600 a year.

These are but a few of the long distance plans used by businesses, large and small, to increase the efficiency and effectiveness of their operations. While the plans I have cited relate to selling operations in a business, our plans are not restricted to selling but actually cover every phase of business activity. We have actually compiled a list of over 350 different plans that are in active use by business today. The job of our long distance salesman is to relate one or more of these plans or, if necessary, work out a new plan for businesses that need them.

### Up-to-Date on Some Services

There are a number of services of value to businesses that we have fairly well kept abreast of. One is the private branch exchange or PBX. Another is teletypewriter or TWX service. Even in times of heavy demand for basic services, these two items have come in for their share of development. However, we are taking a new look at both and carefully checking present users for additional requirements and studying larger businesses without these services to determine their possible need for such.

*(Please turn to page 47)*

# THE PLANT MAN'S Notebook

by Ray Blain, Technical Editor

THE PRESENT trend in this country is definitely toward an increase of individual lines for residential service. We believe this is as it should be when we consider the extent to which we use our telephones. When many residences now have two lines, it does not appear reasonable to have other one-station families connected to a line serving two, four, eight or more parties. An increase in individual lines in any residential area will, however, require a considerable increase in the cable distribution plant.

It now appears that this problem may be made somewhat easier and less expensive by the use of automatic equipment concentrators. This equipment, and the general idea is not new, in fact, it has been used for many years in various forms in the Independent telephone industry. Actually, any PAX is essentially an automatic equipment concentrator.

There is a probability, however, that concentrators may be used in a somewhat different manner to provide individual line residential service in certain selected areas. For example, a 50-line automatic unit may be either pole or pedestal-mounted in a congested residential area. Or, in some cases, it may be installed in an apartment house, fire station, etc. Then, ten or more trunks will be used to extend the 50 lines into the nearest central office. Or, perhaps a 200-line unit will be equipped with 50 or more trunks. In any event, the trunking should be on the heavy side so that customers connected to the concentrator would get a line immediately on practically all attempts. This would be equivalent to individual line service and in no case would they be required to fight others on the line for service.

It must be admitted that pole-mounted automatic switching units have not proved overly popular in the past. However, improvements made in automatic equipment in recent years will probably overcome many of these objections. Then, too, the powering of these units may be considerably simplified. As a result of the improved maintenance and few if any service interruptions to exchange cables under constant gas pressure, these units could probably be powered over pairs from the central office. If storage batteries and a rectifier are used at the concentrator, new small type cells that require practically no attention could be used. Small gas engine driven charging units could be utilized to keep these batteries charged in the event of failure of the commercial power supply.

The concentrator should eliminate supervisory trouble on the extra-long loops in an exchange. It might also be possible to utilize small transistorized voice frequency repeaters in these units to provide a commercial grade of transmission in remote residential areas.

Some may argue that this idea is not practical, and they may be right. It would seem, however, that concentrators will provide a better grade of residential service at a lower cost in some areas at least. We understand that one concentrator unit is now undergoing a field trial and to date results appear promising.

• • •

The 2-5 numbering plan (two letters and five numerals) of our nationwide telephone system is undoubtedly here to stay. Perhaps it is now many years too late to even mention the subject, but we cannot help wondering if we would not be better off had we not adopted the use of letter prefixes to numbers on dial switching systems. In the latter case, we could have had a straight number dial instead of the letter number variety now generally considered standard. This, too, would have simplified our telephone directories greatly.

When we first questioned the need of letters as well as numerals on dials several years ago, "long hairs" of that era patiently explained to us that the average mind just couldn't remember seven digits and dial them accurately, but that almost any "lame brain" could retain two letters and five digits and dial them without difficulty.

Now, however, where and when the national customer toll dialing plan is used, the poor brain must remember and the caller dial a three-digit area code in addition to the two letters and five digits of the called number. This means 10 pulls of the dial, eight digits and two letters. In other words, we can remember eight numerals now, but in the beginning we could remember only five. Perhaps we are getting smarter, or at least improving our memory.

The Blain residence receives, on an average, at least one wrong number call almost daily. Some evenings we receive even more. We are certain that this is not mechanical trouble for our service is excellent. There is no doubt that wrong number calls, due to careless dialing, represent a considerable loss on all telephone switching systems. Frequently, we inquire the number desired on these calls and often the indication is clear that letters and numbers are being confused by the caller which result in dialing the wrong number.

Our number is JEfferson 3-3020. It is believed though that 533-3020 would prove both as easy to remember and be as convenient to dial as JE 3-3020. Please do not get the idea that we are finding fault with telephone service in general. It is realized that we have the largest and best telephone system in the world. It is only that we think it could possibly have been even better by letter prefix elimination. What do you think?

• • •

A recently developed L-shaped, threaded-shank staple is now offered as a replacement of the U-shaped, smooth-shank variety that has been in common use for so many years. The L-shaped staple, although of the same overall length, provides approximately the same or even greater holding power

than the U-shaped staple immediately after driving. This holding power increases considerably after it has been in place for only a short period of time.

The L-shaped staple is especially recommended for use in long-life, pressure-treated poles. It should prove especially desirable for use in holding ground wires in place on poles. This staple should last, without attention, for the life of both the wire and the pole.

• • •

It is very gratifying to note the recent tremendous increase in the use of retractible cords on desk-type telephones. The public has "gone" for this type of cord in a big way even at an increase in cost.

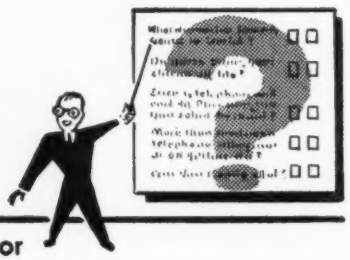
It is still our belief that the retractible cord will eventually replace the straight cord entirely on the desk-type telephone.

• • •

Strange as it may seem, two out of every three Ohio Bell present-day employes are women. Today, there are many women serving in professional capacities with this company, carrying on skilled duties handled by professional people in outside industry.

There are more than 200 separate job classifications for Ohio Bell women at the present time. The operator, long a popular symbol of the telephone woman, vocationally now represents just about half of all Ohio Bell women. There are now more than twice as many women in this company as there were back in 1940, and many of them are holding jobs no woman had attempted up to that time.

# PLANT MAN'S QUIZ



by RAY BLAIN, Technical Editor

**Q. Please explain what type of vacuum tube will be used in the underwater repeaters of the proposed transatlantic submarine telephone cable?**

A. We are advised that the tube finally adopted is a conservatively designed suppressor—grid pentode. The design features of this tube were completed back in 1941, and it has not been essentially changed since. It has a large cathode area and low cathode temperature: It has a low plate potential of 60 volts. It also has large internal spacing between elements.

This tube is rugged and is of shockproof construction. It is reported that some of these tubes have been under continuous test for over 13 years. Moreover, 18 have been in operation over four years in repeaters on the Key West-Havana cables.

The indications are that these tubes will have better than a 20-year life expectancy on the North Atlantic cable.

• • •

**Q. When preparing for a cut-over, is the use of wooden toothpicks still considered the best method for opening relay contacts on new equipment?**

A. This arrangement is still extensively used and is generally considered satisfactory. Many now make use of small pieces of thin plastic material to insulate the relay contacts. A hole can be punched in this plastic and a cord threaded through so that the relay blocking may be removed quickly.

Care must be exercised though to make certain that the plastic used is thoroughly cleaned. Some plastic sheets are covered with a thin film of oil when received and this, if used, will cause serious contact trouble.

• • •

**Q. Is there any objection to the installation of a pole balcony when a cable cross-connecting terminal is used? We are of the opinion that these balconies will make the work of our lineman both easier and safer.**

A. Pole balconies are not generally used these days, but there is no serious objection to their installation where it is believed that they will serve a real purpose. Wood platforms do rot out though and become unsafe. The general present-day practice is to use an expanded metal grating for the platform. Guard rails are also generally considered necessary in the interest of safety.

• • •

**Q. How may we determine what pair should be selected in a wet cable for the connection of the tone when the exploring coil locator is used?**

A. Perhaps the best method is to make use of an ohmmeter for the location of shorts, crosses and grounds in the cable. A pair or pairs should be selected with a low enough resistance in the fault to stop the tone. If this cannot be accomplished, then perhaps the tone will reduce sufficiently in volume at the fault that it can be located.

In general, a tone and exploring coil may be used to locate faults with a resistance up to 2,000 ohms. In some cases, however, faults of even higher resistance may be located.

If a shorted pair cannot be found, sometimes a cross or a ground may prove adequate to stop the tone.

Various types of connections should be tried and checked one against the other when attempting to locate a difficult case of trouble by this method.

• • •

**Q. We would like to know what is considered the most convenient and economical method of testing an old aerial cable distribution plant for sheath leaks?**

A. It is suggested that you consider the use of a new spray leak test method recently developed and placed on the market. This method consists of using a liquid concentrate that comes in small bottles of the exact amount required for mixing with three gallons of water. This mixture is carried in a pressure tank. A double spray nozzle is attached to a single roller that is fastened onto a tree-trimmer handle. The nozzles are attached to the pressure tank by a small hose that runs down the tree-trimmer handle.

A man can walk on the ground along the cable span and push the roller along the messenger strand. A span of cable can be sprayed with the liquid so that the entire outer surface is covered completely in three or four minutes.

A special nozzle may be attached to the hose and used to spray cable sleeves in manholes. It is stated that often a defective sleeve may be detected in this manner without entering a manhole.

It is necessary to make certain that all cable being tested is under some pressure. About 4 pounds pressure is considered adequate. Leaks in the cable under test will be indicated immediately in the form of clusters of white foam which build up for about 15 to 30 minutes and are clearly visible from the ground.

The fluid cost of this test is about $2.75 per mile. Crews have found as many as 18 leaks in one day. A large percentage of these leaks are between the poles away from areas where leak-testing was formerly concentrated. Experience to date indicates that this method detects virtually all leaks, large and small, on aerial cable at a fraction of the cost of any other known method.

# How to take the mystery out of toll-call bills . . . with the

12/6 Tdo .85

## MICRO-TWIN microfilm RECORDER-READER

Every telephone man knows what the mystery is—the cryptic notations (12/6 Tdo .85) on toll bills that so many customers question.

Now, Burroughs has developed a way to simplify toll call billing. It will reduce expense for you by making it unnecessary to dig out toll tickets and explain them. Another saving will come from reduced posting time. And it will give the customer a complete description of every toll call he makes. Here's how it's done . . . with the Micro-Twin.

Instead of sending the customer an abbreviated statement of toll charges, do this: Send him the original, fully informative toll call tickets with a simple non-descriptive "facer" of items and total. This is possible with the Micro-Twin, because you can microfilm those slips, front and back simultaneously, to keep your records complete.

You'll have the same record you've always had, but occupying just *one per cent* of the former space. And you'll be enjoying the benefits of the lowest cost way yet found to eliminate time-wasting customer inquiries and money-wasting toll slip handling.

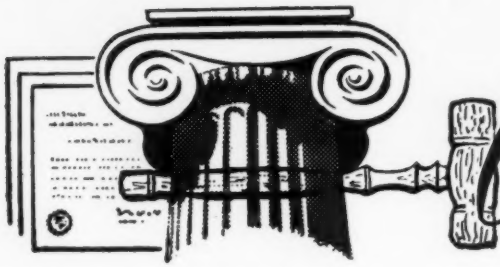
**There are these bonuses, too, in the MICRO-TWIN!**

When it isn't being used for toll-call billing, there are enough other jobs to keep the Micro-Twin busy making important savings—jobs such as permanently recording personnel data, service applications, easement agreements, and other papers you want to retain. Like the toll slips, they can be filed in one per cent of the space they now take.

You'll really need more complete information about the Micro-Twin and how it can improve customer relations, provide positive records, and cut filing time and space to almost nothing. Get in touch with your Burroughs branch, or write Burroughs Corporation, Detroit 32, Michigan.

Wherever there's business there's **Burroughs**

Burroughs B



# Courts and Commissions

## Kansas Independent Requests Approval to Buy 12 Exchanges

The application of Northern Kansas Telephone Co., Effingham, to acquire and modernize 12 exchanges in northeast Kansas is under study by the Kansas Corporation Commission following a hearing.

Herbert Welsh, president of the Effingham company, told the commission recently his company has a $1,170,000 REA loan to provide dial service and other modernization within two years.

The following exchanges which serve 3,400 subscribers, are included in the proposed consolidation:

Easton, Lancaster, McLouth, Meriden, Nortonville, Ozawkie, Perry and Winchester of the East Kansas Telephone Co., Nortonville; Corning, Circleville and Emmett owned by Lucille Skiles of Corning, and St. Mary's, owned by Southwestern Bell Telephone Co.

V V

## Seek Rehearing on Montana Utility Rate Issue Ruling

Montana's Supreme Court was asked by two companies on Mar. 17 to reconsider its recent decision that the state attorney general has the power to chalenge rate increases granted by the public service commission (TELEPHONY, Mar. 19, p. 29).

Mountain States Telephone & Telegraph Co. and the Montana Power Co. sought rehearings of two companion cases which the high court ordered back to the Lewis & Clark County District Court for further trial on their merits. State Attorney General Arnold H. Olsen brought both of the suits in an attempt to block telephone and natural gas rate increases approved by the commission for the two companies.

The power company contended the high court "cited no case where at common law the attorney general brought an action to set aside the rates for commodities fixed by the sovereign or any other order of the state."

In making a decision that the commission is "but a nominal party in the present action," the petition said, the high court overlooked provisions of the Revised Codes of Montana 1947.

Counsel for the telephone company declared the court "overlooked certain facts material to the decision and certain questions decisive of the case. . . .

"We submit it is not clear as to whether or not the complaint is sufficient as it stands in the second amended complaint or whether it should be amended to clearly state who the plaintiff is."

The telephone company said that if the court would re-examine the state's laws it would find the commission "is not a nominal party but an essential party."

"Moreover," the petition continued, "it is not the prerogative of the attorney general to decide what rates shall be paid by the state of Montana for its supplies. That is the prerogative of the legislative branch of government. . . . As a matter of fact, the attorney general does not even have the power or authority to purchase any supplies or materials."

V V

## United of Pennsylvania Gets Raise to Meet Operating Costs

The United Telephone Co. of Pennsylvania, Harrisburg, will increase its rates an estimated $316,000 a year to 62,122 subscribers in 15 south-central counties (TELEPHONY Feb. 12, p. 36).

Following a study of supporting data furnished by the company, the Pennsylvania Public Utility Commission decided the increase should be allowed. The company said the increase is needed to meet higher operating costs.

V V

## C&P Asks Raise in Virginia

The Virginia Corporation Commission has set Apr. 26 as the date to hear a Chesapeake & Potomac Telephone Co. of Virginia petition to pass on to customers the cost of gross receipts taxes levied in 14 localities.

V V

## Seeks Revision of Rates

The Louisiana Public Service Commission was scheduled to hear, on Mar. 22, the application of the Chatham Telephone Co. for a proposed revision of rates for service.

V V

## Interim Rate Raise Approved For North Carolina Company

A request by the Concord Telephone Co. for rate increases totaling $220,000 a year was reduced to $183,173 at a hearing before the North Carolina Utilities Commission on Mar. 22, with the explanation that the new rates for exchanges marked for improvements would not be set until the improvements are completed (TELEPHONY, Jan. 8, p. 42; Jan. 22, p. 30).

Officials of the company told the commission that the company needs the proposed increase in order to earn a fair return on its investment. L. D. Coltrane, secretary-treasurer, said the company would have to show a better rate of return in order to borrow additional working capital, and that $1,430,000 will be needed within the next 15 months for expansion.

No witnesses appeared at the hearing to oppose the request.

If the commission approves, business rates at Concord, Kannapolis and Mount Pleasant would be set at $8.50 for one-party service, $7.00 for two-party, and $4.70 for five-party. Residence rates would be raised to $4.75, $3.80 and $2.45.

Mr. Coltrane said these rates would be applied also at Landis and China Grove when new automatic equipment is installed at these exchanges.

V V

## Criticizes Extent of Borrowing From REA by N. C. Company

Eastern Rowan Telephone Co., Granite Quarry, was authorized by the North Carolina Utilities Commission on Mar. 22 to borrow an additional $325,000 from the REA for expansion purposes.

The company already has borrowed $423,000 from the REA, and the latest loan was criticized by Commission Member Edward McMahan, who said that it will result in the company being 16.5 per cent mortgaged to the REA.

*(Please turn to page 34)*

# NEW!

REG. U.S. PAT. OFF.

# SCOTCHCAST KIT

BRAND

## "bottles-up" splices on multi-conductor communication cable

**KIT INCLUDES** all necessary materials for this revolutionary non-technical insulating method that gives longer-lasting, trouble-free splices on plastic and lead sheathed cable. Less time, at less cost.

### Cut-away shows how spliced conductors are "bottled-up"

ALUMINUM OUTER CHAMBER
ALUMINUM INNER CHAMBER
HARDENED "SCOTCHCAST" RESIN
RIP WIRES AFFORD EASY RE-ENTRY TO SPLICE AREA

**"SCOTCHCAST"** is mixed with activator by squeezing plastic "UNIPAK" Container, and resin is poured into spout on outer chamber. Resin runs between inner and outer chambers. That's all there is to it! Epoxy resin cures to solid state in about 10 minutes, resists acids, alkalies, solvents, oils. Rip wires can be twisted around a pair of pliers to open splice like a can of sardines! "SCOTCHCAST" provides a complete moisture block, both in the cable and around the spliced pairs. Available for inline and wye splices. Write Minnesota Mining and Manufacturing Co., Dept. TEL-45 for complete information.

THE TERM "SCOTCH" AND THE PLAID DESIGN ARE REGISTERED TRADEMARKS FOR THE MORE THAN 300 PRESSURE-SENSITIVE ADHESIVE TAPES MADE IN U.S.A. BY MINNESOTA MINING AND MFG. CO., ST. PAUL 6, MINN.—ALSO MAKERS OF "SCOTCH" BRAND MAGNETIC TAPE, "UNDERSEAL" RUBBERIZED COATING, "SCOTCHLITE" REFLECTIVE SHEETING, "SAFETY-WALK" NON-SLIP SURFACING, "3M" ABRASIVES, "3M" ADHESIVES. EXPORT SALES OFFICE: 99 PARK AVENUE, NEW YORK 16, N.Y. IN CANADA: P. O. BOX 757, LONDON, ONTARIO.

3M COMPANY



XUM

XUM

# *200-point Strowger Automatic Linefinders offer 3 big advantages:*

**200-point linefinders mean lower operating costs, better service, better business! That makes good dollars-and-cents thinking—explains why more telephone men choose Strowger Automatic every year.**

1 **fewer switches to maintain:** Standard traffic tables show that seventeen 200-point linefinders in one group handle over 7.4% more traffic than twenty 100-point linefinders in two groups of 10 each. Result: fewer switches to buy—fewer to maintain!

2 **easier balancing of traffic:** It is easier to distribute traffic in the 200-line groups of 200-point Strowger Automatic exchanges because average subscriber habits are more uniform than in smaller groups. Result: fewer line-assignment headaches!

3 **fewer busy-hour delays:** Greater uniformity of 200-point groups insures that business and residential subscribers with high and low calling rates will be more accurately proportioned between groups. Result: better service to users!

*Address: Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or, call HAymarket 1-4300.*

*Investigate the advantages and economies of 200-point linefinders for your conversion.*

*Call us for a consultation today!*

AUTOMATIC ELECTRIC

XUM

McMahan said, "To me, this appears to be an unsound financial policy on the part of the governmental agency. . . ."

V V

## New York Independent to Make First Rate Raise in 30 Years

The Public Service Commission accepted a tariff amendment filed by Hancock Telephone Co. designed to increase rates effective Apr. 1. This marks the first time in more than 30 years that the company's rates have been changed.

The company serves about 600 telephone stations in and near Hancock, Apex, Cadosia, Fish's Eddy and Kelsey, all in southern Delaware County. Until February, service was rendered through a two-position magneto switchboard in Hancock. On Feb. 7, however, the company converted its operations to dial service after having almost doubled its investment in plant during 1954 by spending close to $70,000 for plant modernization.

In filing its new tariff, the company reported that continued operations under present rates would result in a loss of almost $4,000 this year because of its heavy investment in new plant, and said the revenues to be derived from the new tariff were needed to enable it to meet expenses and earn a fair return.

The new rates are one-party residence, $4.25; five-party, $3.00; 10-party rural, $3.25. Business, one-party, $6.25; five-party and 10-party rural, $5.00.

V V

## Nebraska Commission Grants Rate Increase to Independent

The Nebraska Railway Commission on Mar. 22 granted the Chambers Independent Telephone Co. permission to increase rates at Chambers, effective Apr. 1. The increases range from 30 to 50 cents.

Rural subscribers testified at a hearing last month that falling farm prices should not be accompanied by an increase in telephone rates.

The commission also gave the Northwestern Bell Telephone Co. authority to discontinue special long distance rates at Lexington and Elwood when those two exchanges are converted to dial service.

V V

## Ohio Independent Given Rate Increase Approval

The Old Fort Mutual Telephone Co., serving subscribers in Seneca and Sandusky counties, on Mar. 18 asked the Ohio Public Utilities Commission to approve a rate increase.

The company told the commission that its present rates do not give a fair return. If the increase is granted one-party residence rates will be raised from $2.50 to $3.50 and one-party business telephones from $3.00 to $5.00.

V V

## New Cooperative Forming In Nebraska

The Tri-County Telephone Cooperative Association, Allen, Neb., a newly-formed company, recently elected a board of directors.

Howard Rasmussen, of Hubbard, was named president; Max Raun of Dixon, vice president, Sy Nelson of Jackson, secretary, and Harold Jeffrey of Martinsburg, treasurer.

Other board members include Warren White of Allen, Carl Paulson of Hubbard, Newell Stanley of Dixon and Frank Smith of Dakota City. Howard Gillaspie, Dixon County agent, and A. G. Moseman, Dakota County agent, are ex-officio members in an advisory capacity.

The Tri-County co-op reportedly will seek an REA loan.

The new organization has 400 subscribers who will use service when it is available.

V V

## Two Oklahoma Independents Ask Permission to Change Rates

The Earlsboro Telephone Co. and Bowlegs Telephone Co. have filed requests with the Oklahoma Corporation Commission to increase rates, it was reported recently.

W. C. Collins is owner-manager of the two companies.

**An important part of this child's physical therapy is learning to walk up and down stairs with ease. Portable training steps, braces, crutches and many other types of special equipment are made possible when you support the Easter Seal appeal.**


## Nevada Bill Favors Rate Raise While Court Action Is Pending

A bill to allow public utilities to increase disputed rates while court action is pending was given final passage by the Nevada Legislature on Mar. 18, and sent to the governor for signature.

Under the measure, utilities turned down by the public service commission on rate increase applications will be able to obtain court injunctions and boost the disputed rates while court action on appeals is pending.

The utility, however, would have to file a bond covering the amount of the increase to provide for refunds to customers in the event the increase was finally disallowed.

V V

## Ohio Emergency Party Line Use Bill Moves to Senate

Legislation requiring party telephone lines to be yielded for emergency calls was passed by the Ohio House of Representatives (TELEPHONY, Nov. 27, p. 42).

The measure, approved 122 to 0, previously had been passed by the senate. It now returns to the senate for concurrence on house-imposed amendments. Sponsor of the bill is Sen. Delbert L. Latta.

The proposal was initiated more than two years ago by a group of volunteer firemen from the Toledo area after a similar law was enacted in Michigan. The Ohio-Michigan Firemen's Association and other firemen's groups carried the request to the legislature, but it died in committee at that time. This year it was reintroduced with the aid of the Ohio Independent Telephone Association.

V V

## Kansas Party Line Bill Fails

A bill making it a misdemeanor for anyone to refuse to yield a party line for emergency use died Mar. 17 in the Kansas legislature (TELEPHONY), Mar. 5, p. 31).

V V

## Bill May Benefit Tenn. Co-Ops.

A bill given final passage by the Tennessee legislature on Mar. 18 and sent to the governor for signature would remove the state sales tax from equipment and materials purchased by rural telephone cooperatives.

V V

## Governor Signs Montana Bill

Governor Aronson signed into Montana law on Mar. 11 a bill increasing the pay of members of the state railroad and public service commission from $5,000 to $7,500.

# And he thought carrier would be complicated!

He has just installed his first Lenkurt carrier. Now he knows how easy it is to enjoy carrier's economies!

Like many small-exchange telephone men, he had been putting off buying carrier—simply because it was unfamiliar "electronic" equipment. Then he heard about our "Follow-Thru" Engineering Service, and asked us for detailed recommendations. Following these recommendations, he selected a short-haul Type 33A System.

Rack-assembled and system-tested, his equipment was ready for installation on delivery. His men simply followed complete, clearly illustrated, easy-to-understand instructions. After uncrating the carrier rack, they bolted it to the floor—hooked up line, voice termination, power, and ground connections—and cut it in. Installation was simple as *that!* And similarly simple instructions will make it easy for his men to keep Lenkurt carrier in regular service.

**Service as long as you want it!** Each step of the way—at installation or at any time during the life of the equipment—we stand ready to assure that your Lenkurt System will work *right!* You can expect—and you will *get*—years of completely satisfactory operation from Type 33A Carrier with no more than routine maintenance.

Why not write now and learn the easy way—the Lenkurt way—to real savings through carrier?

Address: Automatic Electric Sales Corporation, 1033 W. Van Buren St., Chicago 7. Or, call HAymarket 1-4300.

Manufactured for

AUTOMATIC ELECTRIC

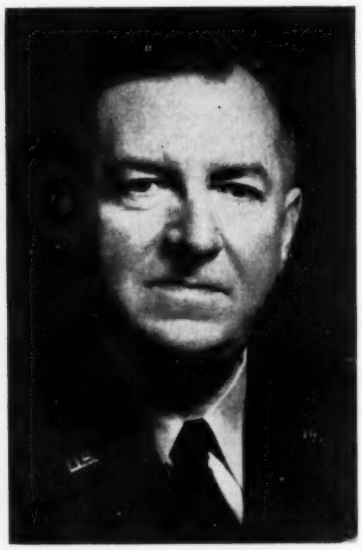
**AUTOMATIC ELECTRIC**—LEADERS IN CARRIER COMMUNICATIONS—**LENKURT**



XUM

## General O'Connell to Become Army's Chief Signal Officer

The Senate on Mar. 14 confirmed the nomination of Maj. Gen. James D. O'Connell as Chief Signal Officer of the Army and confirmed his permanent



MAJ. GEN. J. D. O'CONNELL

promotion to the rank of major general. General O'Connell, who has been Deputy Chief Signal Officer since Dec. 1951, will replace Maj. Gen. George I. Back who is retiring from the Army on Apr. 30.

General O'Connell was born in Chicago on Sept. 25, 1899. He attended the University of Chicago for one year. He was graduated from the U. S. Military Academy, and commissioned a second lieutenant of Infantry in 1922.

He served with the Second Infantry at Fort Brady and Camp Custer, Mich., then entered the Signal School at Camp Alfred Vail, N. J., graduated in 1925 and joined the 35th Infantry at Schofield Barracks, Hawaii.

In September, 1928, General O'Connell was assigned to the 24th Infantry at Fort Benning, Ga., then became an instructor at the Signal School, Fort Monmouth, N. J. In 1929, he entered Yale University from which he received a Master of Science degree in 1930, then returned to his position at the Signal School.

General O'Connell entered the Command and General Staff School, Fort Leavenworth, Kan., in July, 1936, and graduated a year later. He was then named officer-in-charge of the Specification and Records Section of the Signal Corps Engineering Laboratories at Fort Monmouth. In January, 1940, he became Executive Officer of the Laboratories, and a year later was appointed officer-in-charge of Radio Communications Projects there.

In July, 1942, he was transferred to the Office of the Chief Signal Officer, Washington, D. C., as chief of the General Development Branch. He was named executive officer of the Signal Supply Service in the Office of the Chief Signal Officer in January 1943. From July 1943 to June 1944 he was officer-in-charge of the Technical Section.

In 1944, he was assigned as chief of the Requirements Branch, Signal Section, 12th Army Group, with which he served in England, France and Germany. Upon his return to the United States in 1946, he became Director of the Signal Corps Engineering Laboratories at Fort Monmouth.

In May, 1947, General O'Connell was appointed Signal Officer of the Eighth Army in Japan. In September, 1949, he became a member of the Signal Corps Board at Fort Monmouth and, in October, 1949, was named Deputy President of the Board. From January to March, 1950, he served on temporary duty with the Army Field Forces at Fort Monroe, Va., as a member of the Army Equipment Policy Panel, after which he resumed his position as Deputy President of the Signal Corps Board at Fort Monmouth.

In August, 1951, General O'Connell was assigned to the Special Assignment Group, Boards and Committees, in the Office of the Chief Signal Officer. In December, 1951, he assumed duties as the Deputy Chief Signal Officer. By approval of his nomination by the Senate on Mar. 14, 1955, General O'Connell became the 17th Chief Signal Officer of the U. S. Army.

General O'Connell has been awarded the Legion of Merit with Oak Leaf Cluster.

**Final installations of the 20,000th telephone installed by General Telephone Co. of the Southwest in San Angelo is made by LESLIE H. WARNER of Chicago, president of the Leich Electric Co., manufacturers of the instrument which was installed. B. G. FOWLER, installer for General, and MRS. ROBERT R. TUTTLE, who became subscriber to General's 20,000th telephone in San Angelo, observe the final installation step. Walter G. Wright, president of General of the Southwest, received a surprise call from Thomas A. Boyd, senior vice president of General Telephone System in New York City, congratulating the company on its growth to 20,000 telephones in San Angelo.**

V V

## New Utilities Commission Proposed by Iowa Measure

A bill to create a state public utilities commission, empowered to regulate power and gas companies, was favorably reported to the Iowa House of Representatives on Mar. 21 by its public utilities committee.

Telephone companies, rural electrification cooperatives and municipally-owned utilities would be exempt from regulation under the measure, which has the support of other privately-owned utilities in the state.

The commission would consist of three members, named by the governor to six-year terms at salaries of $7,500 a year. Besides controlling rates of gas and power companies, the new agency also would regulate such factors as safety, service and security.

Utility rates in Iowa now are regulated by some 600 city and town councils.

Although Iowa utilities for decades fought proposals for establishment of a state regulatory commission, their attitude has now changed to one of support for such a plan, according to a statement released by Ben A. Webster, executive secretary of the Iowa Utilities Association.

The privately-owned utilities now will have no objections to such a commission even if rural electric cooperative and municipally-owned plants are excluded, Webster said.

V V

## Michigan Independent Sold To Detroit Purchaser

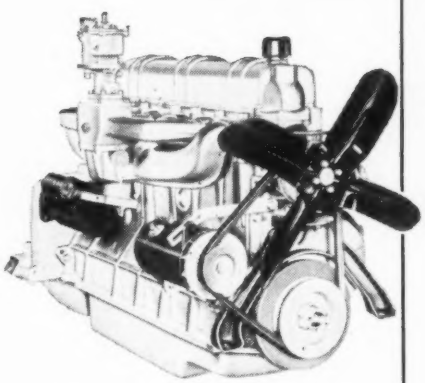
After 28 years in the telephone business, Mrs. Mary O'Donald has sold Community Telephone Co., Howard City, Mich., to Mr. and Mrs. Albert Spry of Detroit, who have taken over the business.

Mrs. O'Donald has been owner and operator of the telephone company since 1926, when she and her late husband, Charles M. O'Donald, purchased the business from Sidney Reynolds.

Mr. and Mrs. Spry are from Detroit, where he was owner and operator of Redford Electrical Co. the last several years.

## New Leadership for the Leader in the 16,001-19,500 GVW Class!

**New R-1700 Series models** operate with less downshifting, less lugging — reduce driver effort, increase operating economy. Four-speed transmission standard. Optional 5-speed direct-in-fifth or 5-speed overdrive available. R-1700 Series GVW ratings, 16,000-20,000 lbs. GCW rating, 35,000 lbs.



**All-new 140-hp Black Diamond 264 engine** combines famous INTERNATIONAL long life with new, economical sustained-power performance. Has new dual-barrel carburetor, new manifolding, 7.0-1 compression ratio — new low-friction design with 3-ring controlled-expansion pistons — new 50° ramp camshaft for longer valve life — new solenoid-type over-running clutch starter — new 11-inch clutch with 15% more lining area, 25% less pedal pressure. Maximum engine torque: 234 lb-ft at 2000 rpm.

# NEW R-1700 Series

**With an engine that tops 'em all for efficiency — the all-new 140-hp INTERNATIONAL Black Diamond 264!**

**New models and new features** keep coming from INTERNATIONAL all the time! Here now are 1955's first — the R-1700 Series, designed by the leader in the 16,001-19,500 GVW range to bring new hauling profits to every operator using trucks in this class.

These brilliant new R-1700 Series trucks far surpass all former INTERNATIONAL leaders in this GVW classification. And they are powered by an engine that puts out more horsepower per cubic inch than any comparable 6-cylinder truck engine on the road!

Visit your INTERNATIONAL Dealer or Branch and get full facts on these money-saving, money-making new INTERNATIONALS. You'll quickly see why — in performance, economy, efficiency — they outrank anything in the 16,001-19,500 GVW class.

**WORLD'S MOST COMPLETE TRUCK LINE**

200 basic models from ½-ton pickups to 90,000 lbs. GVW off-highway models, including six-wheel, four-wheel-drive, cab-forward, cab-over-engine and multi-stop delivery types . . . 32 engines from 108 to 356 horsepower, with widest choice of gasoline, LPG, or diesel power . . . wheelbases, transmissions and axle ratios for any need . . . thousands of variations for exact job specialization.

**INTERNATIONAL HARVESTER COMPANY • CHICAGO**

International Harvester Builds **McCORMICK**® Farm Equipment and **FARMALL**® Tractors . . . Motor Trucks . . . Industrial Power . . . Refrigerators and Freezers

***Watch "The Halls of Ivy," with Ronald Colman and Benita Hume, CBS-TV, Tuesdays, 8:30 p.m., EST***

**INTERNATIONAL® TRUCKS**

*"Standard of the Highway"*

## Ohio Independent Sponsors Free Enterprise Open House

Ohio Consolidated Telephone Co. was one of the 32 industries and businesses assuming the role of host to approximately 700 Scioto County city, rural and parochial school teachers during the first Business-Industry-Education Day held in Portsmouth recently.

Business-Industry-Education (B.I.E.) Day is planned as an annual event and is one of the Portsmouth Chamber of Commerce's biggest projects of the year. The purpose of this program is to give teachers an opportunity to go behind the scenes and learn how businesses operate under this great American free enterprise system of ours.

Following a briefing session for all the teachers at Portsmouth High School, the 40 guest teachers assigned to Ohio Consolidated Telephone Co. were transported by the company to its general headquarters offices. Following a message of welcome, R. N. Cole, president, explained the operation of the company as a part of the Independent segment of the nation's telephone industry. He then outlined their program for the day which was designed to give them an example of a regulated free enterprise providing a vital, necessary and ever-improving service to the public.

The teachers in four groups, each accompanied by two telephone company employes as guide and hostess, toured the general executive, commercial, traffic, plant, including the automatic switchroom, and revenue and general accounting offices.

Luncheon followed the tours. After a "get acquainted" session of telephone company personnel with the teachers, and group singing, the afternoon session was opened with a skit presented by the traffic department, portraying a typical day-to-day customer-traffic department problem.

M. W. Matz, Portsmouth district manager, presented a review and explanation of the Portsmouth district operations, followed by a question-and-answer period conducted by Mr. Cole.

The day's program also included explanation of various exhibits displayed in the meeting room, which included operation of automatic switches, cable splicing, etc., and various items of special services available, such as hard-of-hearing handsets, colored telephones, electronic secretary, etc.

All of the teachers expressed their appreciation of the fine program which the telephone company had arranged for them. Reports indicate that the first B.I.E. Day in Portsmouth was a success.

The meeting adjourned at 3:30 p.m., at which time the teachers were delivered back at the high school.

The following day, company employes in all departments of the Portsmouth district toured the operation in the same manner, visiting the exhibits which had been left in place from the preceding B.I.E. Day. Mr. Cole and Mr. Matz also reviewed company operations for all of the employes assembled in an auditorium late that afternoon.

**Starting at top (left to right): W. E. MIERS, repair supervisor, explains operation of addressograph machine. MRS. NORMA BLEVINS, assistant chief operator, explains handling of toll calls. MAYNARD W. MATZ, district manager, presents a review and explanation of the Portsmouth district operations (R. N. COLE, president, can be seen at the right end of the front row). O. V. NEWMAN, equipment supervisor, demonstrates operation of an automatic switching train. R. N. COLE, president, conducts a question-and-answer period. MRS. MARGARET CAMPBELL, traffic supervisor, narrator, and MRS. NORMA BLEVINS, assistant chief operator; MRS. FERNE McCOY, traffic clerk; MRS. RUTH GYOR, operator; JACK MOORE, assistant district manager; and MRS. INA WEBB, chief operator, present a skit portraying a typical day-to-day customer-traffic department problem. T. E. MORGAN, commercial representative, advises group of various items of miscellaneous services available in connection with regular telephone service, including colored handsets and hard-of-hearing equipment. R. E. KERN, plant foreman, can be seen in the background.**

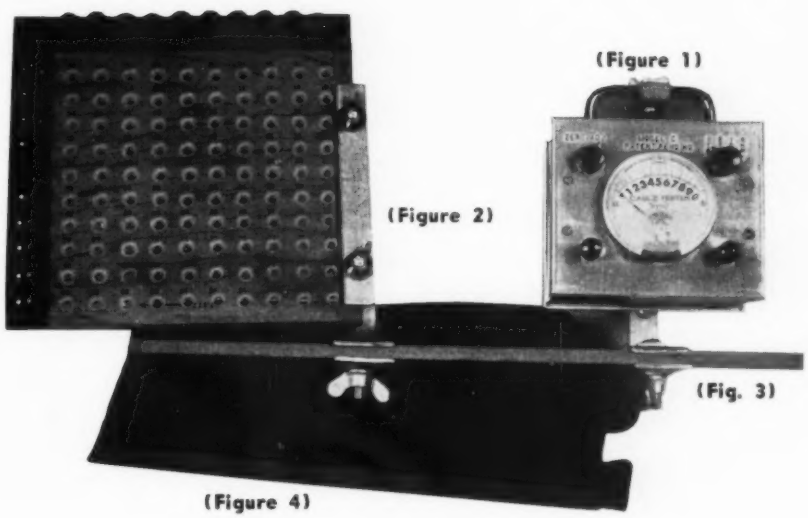
**"To preserve the United States that we have known and in which we desire our children and grandchildren to have the benefit of living, we must continue to subscribe to the doctrine that man owes something to man. In trying to help ourselves, by working out these problems, we will be making a contribution to their heritage."—W. M. VAUGHEY, *president, Independent Petroleum Association of America.***

# THE *Murphy* (ONE MAN) CABLE TESTER

NEW IMPROVED

**Over 1800 of these TESTERS now in use in United States, Canada and Hawaii . . .**

**NOW!** . . . for the first time, ONE MAN can test to identify cable pairs and do it three times as fast as two men could formerly do the same work. "ONE MAN" splicing crews are now a reality. On new cable work, labor costs are reduced by from 30% to 50% depending on just how far you are prepared to go in utilizing the ONE-MAN crew.



(Figure 1)

(Figure 2)

(Fig. 3)

(Figure 4)

## NOW WE CAN HELP YOU:

1. **REDUCE cable splicing costs even more.**
2. **Make the splicers work EASIER.**
3. **Eliminate many troubles and delays caused by wrapping cableends.**
4. **Still further SPEED UP new cable splicing operations.**

### MODEL C METER UNIT (Figure 1)

Three Test Sets in one — The Murphy ONE MAN Cable Pair Identifier, The Buzzer Continuity Tester — and the Ohmeter for locating trouble. Heavy, long-life battery with special bracket clamp to hold it in place. Can't shift, can't short out — can't leak.

### COMBINATION TAG & TERMINATING BOARD

Figure 2 (Model TTB) — Automatically sorts and groups the wires just the way you need them for connecting to the binding posts of the Terminal Board — only, in this case, the Terminal Board is built right into the Tag Board. Complete Directions with each unit.

### DUAL PURPOSE CLAMP (Figure 3)

This clamp will hold the Terminating Board at any angle, above or below the strand — for greater convenience and speed in boarding a cable. The clamp can be used to hold the present standard tagboard in position while using the earlier type of Terminal Board. The same DUAL PURPOSE CLAMP is also used to hold the METER UNIT above the strand, right over the splice, at any convenient angle, for the greatest visibility of meter face.

### THE NEOPRENE BAG (Figure 4) Model NP

The bag is simply slipped over the Terminating Board and taped down around the cable armor to seal out the weather. Bag is made of U. S. Navy Spec. High Tear Nylon Fabric covered on both sides with a heavy coating of Neoprene. Can be used over and over hundreds of times.

### CARRYING CASES

Durable carrying cases are available for all units.

***For Prices, additional Information, specifications, references, etc., Write***

## MURPHY ENGINEERING LABORATORIES, INC.

**4419 TULSA, HOUSTON 24, TEXAS** **PHONE TW-4000**



YUM

## Hospital Uses Telephone In Training Cerebral Palsy Cases

A miniature telephone system is helping in the training of cerebral palsied children.

The system—made up of a discarded switchboard and three telephones—was installed in their spare time by Illinois Bell Telephone Co. employes at the Illinois Children's Hospital-School, a state institution operated by the Department of Public Welfare in Chicago. The idea was a project of the North Side Council of the Pioneers, a telephone organization for Illinois Bell employes with 21 or more years' service.

Each of the three telephones interconnects with the other two and the switchboard so that a telephone conversation can be carried on. The "operator" can ring the other two telephones in another room from the switchboard when asked to by one of the youthful "subscribers."

"We hope this experiment will help motivate the children to speak more adequately, thus aiming toward improved speech," Superintendent Richard Eddy of the Hospital School, says.

V V

**Ground was broken recently by the Union Telephone Co. for a new automatic telephone building at Owosso, Michigan. The new exchange will be placed in operation in the late spring of 1956. This installation will provide for operator toll dialing and will be so designed that a subsequent installation of automatic toll ticketing equipment to be installed within 12 months following the conversion of the Owosso exchange to automatic operation—will permit customer toll dialing. Shown at the ground breaking ceremony are (left to right): NED KREIGHOFF, contractor; GEORGE RUBELMAN, Owosso building inspector; T. A. SAUNDERS, president of the Union Company; CHARLES MOORE, mayor of Owosso; HARRY STIHLER, architect; WILLIAM STICKEL, city commissioner, and JOSEPH ROBBINS, president, Owosso Chamber of Commerce.**

## OBITUARIES

GEORGE M. WELCH, 74, who was president of the Michigan Bell Telephone Co. from 1934 to 1946, died on Mar. 15 at his home in Pompano Beach, Fla.

Mr. Welch, born in St. Charles, Ill., ended a 42-year telephone career when he retired. He started as a stenographer with the telephone company in Minneapolis, joining the Michigan company four years later.

Mr. Welch was named general manager of Michigan Bell at the age of 35, the youngest man in the Bell System holding that post at the time, that appointment following his rapid rise through the company's commercial department. He was elected vice president of the company in 1920. Associates recall his tremendous interest in development of dial service in Michigan and his major part in its advancement.

Mr. Welch was a former international president of the Telephone Pioneers of America. In 1941, he was awarded an honorary doctor's degree in business administration by the University of Michigan. He was a member of Michigan Bell's board of directors until 1951, when he left Detroit for Florida.

Surviving are his widow, Sarah, two sons and two married daughters.

* * *

MICHAEL F. EGAN, 61, retired employe of The Lincoln (Neb.) Telephone & Telegraph Co., died at Lincoln on Mar. 7.

Born in Ireland, Mr. Egan came to the United States in 1909 and lived in Lincoln the rest of his life.

He was employed by the Lincoln company in 1917 as a shipping clerk and the next year became a combinationman. In 1926 he transferred to the commercial department and worked as a solicitor-collector until retirement in 1948.

He was a charter member of the F. H. Woods Chapter of the Independent Telephone Pioneer Association.

* * *

HOWARD N. GRIFFIN, 59, president and general manager of the Amery (Wis.) Telephone Co. died of a heart ailment at his Amery home on Mar. 6.

Mr. Griffin had devoted his life to the telephone industry. The company which he headed at the time of his death was incorporated in 1902 by his father. As early as Mr. Griffin was able to do so, he commenced work on the lines. He was 27 and supervising line work for the company when he decided to seek higher education. He left Amery to attend the Dunwoody Institute at Minneapolis, graduating with a degree in electrical engineering. Following graduation he served as an instructor at the institution for a year. Then to further his learning he attended night school for eight years to receive an engineering degree at the University of Minnesota.

In 1938 he became president of the Amery Telephone Co. and in 1943 assumed duties as general manager as well.

At the time of his death the organization which he headed was serving over 1,500 subscribers and was preparing to undertake a $643,000 REA-financed automatic conversion program. Mr. Griffin was particularly well known for the excellent public relations he created while heading the company.

In 1954 he was named chairman of the REA Borrower's Committee of the Wisconsin State Telephone Association.

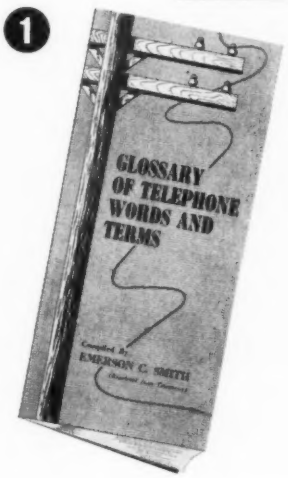
Survivors include his widow and 10 children.

V V

**". . . if we are to really attack the problem of retirement and solve it in a way which will support and not destroy our free enterprise system we must do it by helping every individual to build his own retirement program. We must make him so self-reliant that the demagogue whether he be a politician or a labor leader cannot buy his vote by promises."—A. D. MARSHALL, *manager, employe benefits services department, General Electric Co.***

# *Telephony Announces...* 2 NEW BOOKS

❶




## "GLOSSARY OF TELEPHONE WORDS AND TERMS"

**By Emerson C. Smith**

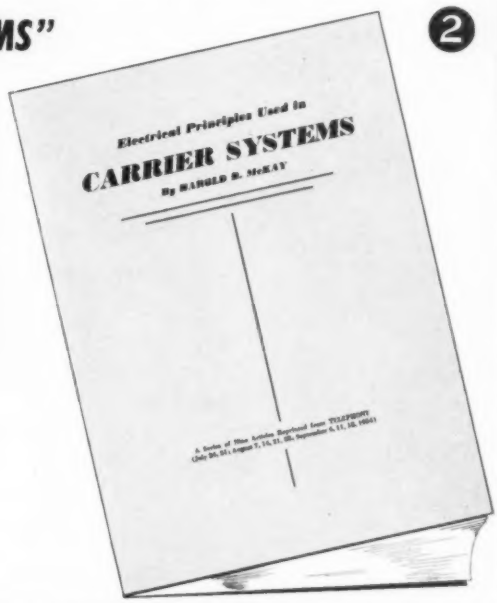
A 54-page (4"x8¾") reprint of five installments published in TELEPHONY. It includes definitions of 1,140 words and terms used in the telephone business. It is the only telephone glossary available. It was compiled by Emerson C. Smith, consulting engineer of Honolulu, Hawaii, who has had 26 years of experience in the technical and engineering phase of telephony. 25,000 copies have already been sold, indicating the need for such a volume. Prices are as follows:

| | | |
|---|---|---|
| 1-101 Copies | each | $ .50 |
| 101-1000 Copies | each | .45 |
| 1001-3000 Copies | each | .40 |
| 3001-5000 Copies | each | .35 |
| 5001-10,000 Copies | each | .30 |
| over 10,000 Copies | each | .25 |

## "ELECTRICAL PRINCIPLES USED IN CARRIER SYSTEMS"

**By Harold B. McKay**

❷




A 44-page (8¼"x11¼") reprint of nine popular articles which appeared in TELEPHONY. The scope of the articles include vacuum tube principles, suggestions for a new way of thinking about electrical circuit components, actual parts and functions of carrier systems and a guide to trouble shooting on carrier equipment. It is ideal for use in training schools. The author has been in the radio and telephone communications field since 1920 and has had a broad experience in carrier design and operation. 3,700 copies of this reprint already have been sold. Prices are as follows:

| | | |
|---|---|---|
| 1- 100 Copies | each | $ .75 |
| 101- 200 Copies | each | .70 |
| 201- 300 Copies | each | .65 |
| 301- 400 Copies | each | .60 |
| 401- 500 Copies | each | .55 |
| 501-1000 Copies | each | .50 |
| over 1000 Copies | each | .40 |

USE THIS HANDY BLANK TO ORDER BOTH BOOKS—PLEASE SEND REMITTANCE WITH ORDER

**TELEPHONY PUBLISHING CORP.**
**608 SOUTH DEARBORN STREET, CHICAGO 5, ILLINOIS**

Date_____

Enclosed is my check for $_____ for
_____Copies of "Glossary of Telephone Words and Terms."
_____Copies of "Electrical Principle Used in Carrier Systems."

NAME_____ COMPANY_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

## TELEPHONE TECHNOLOGY AND NATIONAL DEFENSE

# Helping the Army call its shots

Depicted in action here is an M-33 fire control system . . . produced for the Army by Western Electric.

The M-33 system provides mechanical hands and electronic brains needed to track targets racing through space, to aim anti-aircraft guns so that shells are guided unerringly to points in the sky where invaders will be. It is based on radars and electronic computers. Many of the basic principles employed are the same as those used to guide dial telephone calls to the right number.

Here again is another achievement of telephone technology that is helping to keep Uncle Sam's defense strong!

Western Electric

MANUFACTURING AND SUPPLY UNIT OF THE BELL SYSTEM

# POWER EQUIPMENT FOR CENTRAL OFFICES

*Continued from page 19*

tubes, and the desired frequency may be readily obtained. Such devices were first developed and tested 10 or 12 years ago. At that time they, and the necessary reserves, were too expensive to compete with other ringing devices. I understand that satisfactory electronic ringing devices have recently been manufactured and put on the market in competition with other types of ringing generators.

It appears likely that within a few years a ringing generator using transistors instead of tubes will be made available. An electronic device using transistors should be very dependable and, being operated from the battery, it may not even need a reserve.

*Tones.* Various tones are required in central offices, such as dial tone, audible ringing tone, busy back, trunk busy, etc. High and low tone usually suffice for the average central office and they may be continuous for dial tone and generally interrupted to give spurts of tone for the other uses. It is highly desirable that these tones be smooth and pleasing to the ear rather than harsh and raspy. The tones require small amounts of power with low voltages making it rather difficult and expensive to provide suitable alarms necessary to give an indication of trouble or failure of one or more of the tones.

For many years tones were generated by interrupting battery through commutators on the ringing machines. They are still used extensively today and are moderately satisfactory, except that when the commutator becomes dirty the tones change somewhat making it desirable to clean the commutator at frequent intervals. This is a maintenance expense that should be considered in determining what type of tone generator should be purchased.

Magnetic type tone generators are available today. They operate from 60 cycles and the harmonics taken off to produce high and low tone, one magnetic generator being required for each frequency.

Tones are also produced by the use of alternators. A specially slotted rotating armature passing by stationary windings generates the tones required. This is a small compact unit that is trouble-free and moderately efficient. It is usually direct connected to the ringing machine or built into it and thus may be obtained at a moderate price.

*Interrupters.* Interrupters are needed to interrupt the tone supply, to divide the ringing current into the familiar long and short spurts of ringing or other code types of ringing and to equalize the ringing current of the ringing generator.

About a half dozen interrupters are needed for small offices having straight machine ringing—up to about 25 interrupters in community automatic offices using code ringing.

A chain of relays is sometimes used to provide these interruptions, but it can generally be accomplished more economically by a motor driven interrupter. Since there are so many interrupters used in code ringing offices and the time intervals so short, great care should be used in picking one of good quality and preferably one that can be easily adjusted.

In the Bell System only one frequency ringing is used, namely, 20 cycles. Independent telephone companies use one or more frequencies.

Since the most economical source of tones is obtained by a small rotating tone generator, and the same is true of interrupters, it follows that the best and most economical method of obtaining ringing, tones and interrupters is by using a rotating ringing machine direct connected to the tone generator and gear connected to the interrupters. The ringing machine should be driven by an ac motor with Alnico field for the ringing generator having moderately close voltage regulation. A similar ringing machine, except driven by a dc motor may be used for reserve, or an inverter furnished to run the ac motor in case of power failure. The latter arrangement is more economical, but is not usually considered as dependable.

If more than one ringing frequency is required, they may be obtained by electronic devices, magnetic devices, interrupters or rotating machines. Bear in mind the first cost, maintenance, efficiency, and reserve.

One other point should be considered in making cost comparison of the vari-

*(Please turn to page 47)*

**LEFT PHOTO: A lineman (indicated by arrow), swings in his cable "buggy" 135 feet above the Cumberland River as a ferry carries a construction truck under a cable crossing of the Twin Lakes Telephone Cooperative, Gainesboro, Tenn. Mark Dudney, president, and Frank Richmond, general manager, report that to date about 500 miles of new pole line have been built in two counties of the five-county service area. The company now serves 1,300 subscribers. Upon completion of 500 additional miles of pole line in the remaining three counties, it is estimated that the company will provide a total of approximately 4,500 subscribers with dial service from 10 exchanges. Completion date for the entire project is planned for Dec. 31, 1955. RIGHT PHOTO: MRS. GWEN MOCHOW, owner of a fishing camp at Byrdstown, who was instrumental in assisting in the commercial telephone development of that area in Pickett County where telephone service has never been given before.**

# Spotlighting toll service—

# CALCULAGRAPH

## ...speeds toll service

## ...protects toll revenues

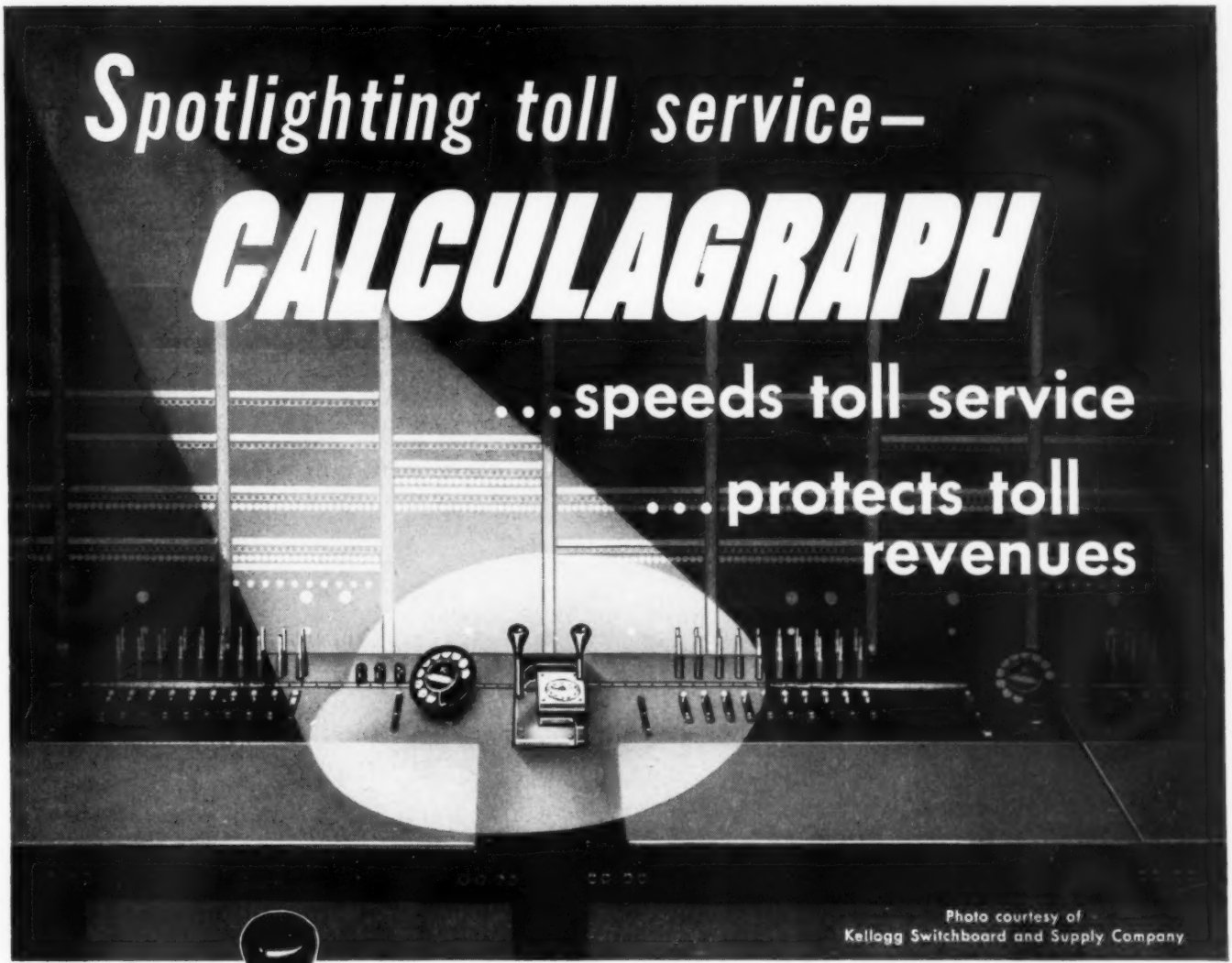
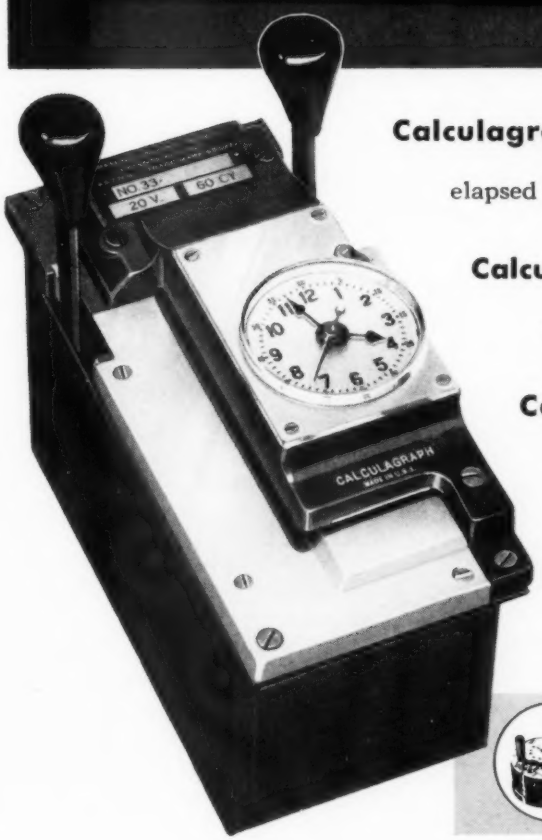


Photo courtesy of
Kellogg Switchboard and Supply Company




**Calculagraph automatically figures toll time** – Eliminate time-consuming, service-slowing manual figuring of elapsed time on toll calls. Calculagraph is quicker, easier, completely accurate. There is no possibility of clerical errors.

**Calculagraph is accurate to the second** – Precision calculations by Calculagraph are accurate down to the last second... make it possible to collect all the revenue due on every toll call. Calculagraph records are indisputable.

**Calculagraph prints permanent toll records** – Elapsed time records printed on permanent toll tickets make accounting methods simpler, more efficient. Tickets are easier to read, permanently legible, available for reference at any time.

AUTOMATIC TOLL TIME CALCULATING AND RECORDING PAYS! Complete information is contained in the Calculagraph Bulletins available in a handy file folder. Write for your copy to Dept. TY.

**CALCULAGRAPH COMPANY**
HARRISON • NEW JERSEY

THE STANDARD OF ACCURACY . . . SINCE 1892

# construction and maintenance DIGEST

- **Block that bolt**
- **Insure your power**
- **Keep the charge**
- **Profitable noise**
- **Good cable "adds up"**

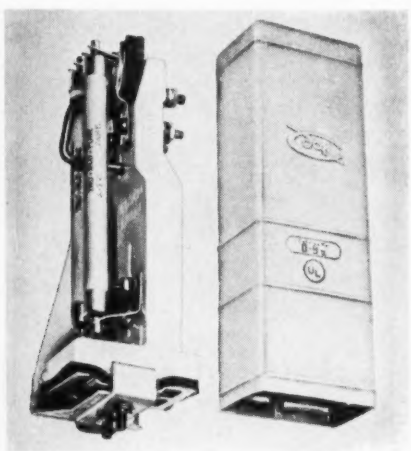
Published every week to help you get the most out of your materials and supplies dollar

*by C. J. Reynolds, Stromberg-Carlson*

The few dollars you spend on *reliable* equipment today will be repaid a hundredfold in lower maintenance costs for years to come. Protect your investment with the double guarantee offered by Stromberg-Carlson. First, leading manufacturers build this equipment, and guarantee it. Second, because we recommend and sell this equipment to the telephone industry, we *also* guarantee its performance!

### Protect telephones from lightning

No larger than a good-size candy bar is the Cook 09u telephone protector shown here. But it can save you a lot of grief and you can protect single circuits, both indoor and out.

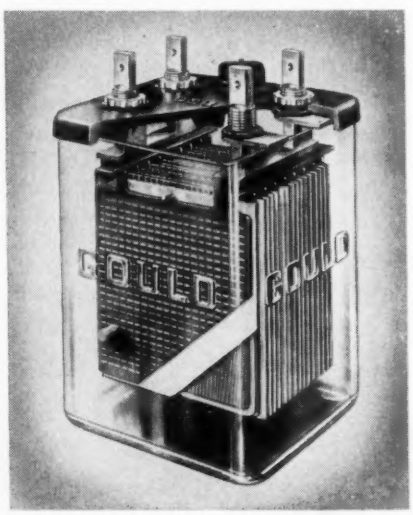


Individual circuits are protected by small unit, measuring 6"x2½"x1¾".

The body is a single piece of heavy white glazed porcelain. Lightning arrestors are two Tru-Gap dischargers, two flat carbons mounted on a copper ground, and two A-9u 7-amp. lavite fuses. Neoprene gasket locks out insects, dust, snow, etc.

### Insure your power supply

Because Planté batteries practically last forever...providing standby power that never fails...they're the best operating insurance you can buy. In switchgear, signal and alarm systems, or emergency light and power applications, these lead batteries have rolled up amazing performance records . . . are famous for their ability to deliver a powerful surge or a steady flow of current the instant it's needed. Make sure you're in operation . . . always. Choose Gould Planté.

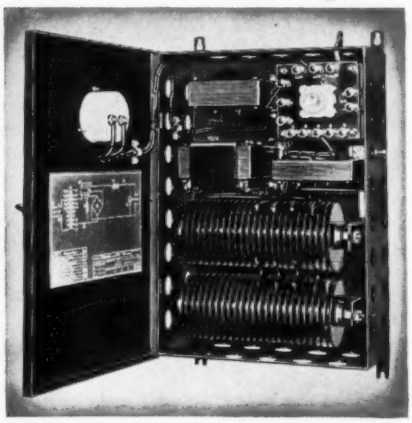



A sure, dependable supply of power when you need it. That, briefly, is the story of this Gould Planté battery.

### Here's a charger that adjusts itself to match battery drain

Daily load demands can vary all over the lot. That's why you need a battery charger that adjusts its output automatically to maintain your batteries in peak condition.

Such a unit is the Electrox Automatic Battery Charger. That word "automatic" is a most important part of its name. The Electrox Charger will maintain a charging rate in proportion to the drain on the batteries within its rating.



A self-regulating battery charger that keeps your storage batteries in top condition and prolongs their life.

The Type RB illustrated is completely automatic, with no relays, vibrators or tubes requiring attention or adjustment. Entirely noiseless, it continues to charge even while the telephone system is operating—with no hum or interference. Write for complete specifications.

### Noise can be money!

Take a business subscriber who has a telephone in some extremely noisy location—and who has finally decided to do something about it. Would you rather have him spend money in building a soundproofed booth—or give **you** the money as monthly income on a telephone which completely licks the noise problem?

The GAI-PHONE is such an instrument. It has a special transmitter that actually creates a "Zone of Quiet" around the handset—even in

a spot as noisy as a boiler factory! It costs the subscriber less than a

booth—and you get the revenue! Ask us for complete details.

**Copper Wire + Paper Insulating Tape + Lead-Antimony Sheath + Accuracy in every detail adds up to—Kennecott Telephone Cable**

Accuracy in every manufacturing process is the reason Kennecott Telephone Cable is of high quality. Careful manufacture—attention to the minutest details—result in dependable, long-lasting cable performance.

*Distributed by*

Stromberg-Carlson®

*Factory, General Offices:*
ROCHESTER 3, NEW YORK

Sales Offices: Atlanta 3, Chicago 6, Kansas City 8, Rochester 3, San Francisco 3. Mfg. Branch, Dallas

ous makes and types of equipment to provide ringing, tones and interrupters. That is, if more than one unit is needed to provide these services then the cost of the mounting and wiring and space requirements of the different pieces of apparatus should be evaluated.

## MERCHANDISING SERVICES

*Continued from page 26*

Since World War II we have gone into mobile radio telephone service. . . .

Special communications systems for big businesses have been given a great deal of attention. Right-of-way or pipeline companies use full-time talking circuits and TWX systems extensively. So do the airlines, civil aeronautics authority, the larger automobile manufacturers, defense and other government agencies. Such services are fairly large in nature and affect the average exchange very little. So let's get back to services that are good revenue producers in small as well as large exchanges.

### Outdoor Telephone Booths

One of these is the outdoor telephone booth. We had a few before the early part of 1950, but generally installed them in special places where indoor booths were impractical. Our program to install them on a concerted scale began in 1950. By the end of 1952 we had 506 in service throughout Georgia. Today we have approximately 1,400 with a goal of a total of 2,500 within the next three years.

We are not neglecting our development of indoor booths and are putting in new ones all along as our towns and cities grow and expand, but our greatest future development we feel lies in the outdoor booth. And incidently we have found that outdoor booths do not hurt revenues from indoor booths, even when located just outside an indoor location.

We have found that our revenues from outdoor booths are greater than that of indoor booths. On the average an indoor installation produces a monthly revenue of about $40. The outdoor installation produces an average of almost $49 per month.

Our experience shows that outdoor booths are good producers in small towns, and our goal is to have at least one outdoor booth in every exchange, located on the busiest federal or state highway. Most of our small exchanges now have such a booth.

The beautiful part about an outdoor booth is that it provides 24-hour service. Unlike an indoor installation it doesn't close up when places of business close up. In many small towns there are no indoor booths available after 9 or 10 o'clock.

We have found that a gaily colored booth attracts more business than one that is not. . . . Another thing we have found is that a booth that is lighted all night brings in revenue at least 40 per cent higher than one that is not. We are installing 24-hour flourescent lights in our wooden outdoor booths to take advantage of this additional usage. We are also repainting our wood booths to make them more attractive.

In connection with inside coin telephones we are making sure that when the potential user approaches he is directed by signs outside and inside the establishment to the location of the telephones.

We are making sure that there is an up-to-date directory at each coin telephone, that all numbers on the dial are legible and that each booth is lit by a 40-watt bulb.

As we develop our coin telephone program we are not overlooking semi-public telephones and are doing everything practical to increase their usage.

From what we are told by many of you, your experiences with outdoor booths has been as good as ours.

### Residence Extensions

Now, I would like to discuss another promotional program designed to create revenues in small exchanges as well as large. It is the residence extension telephone.

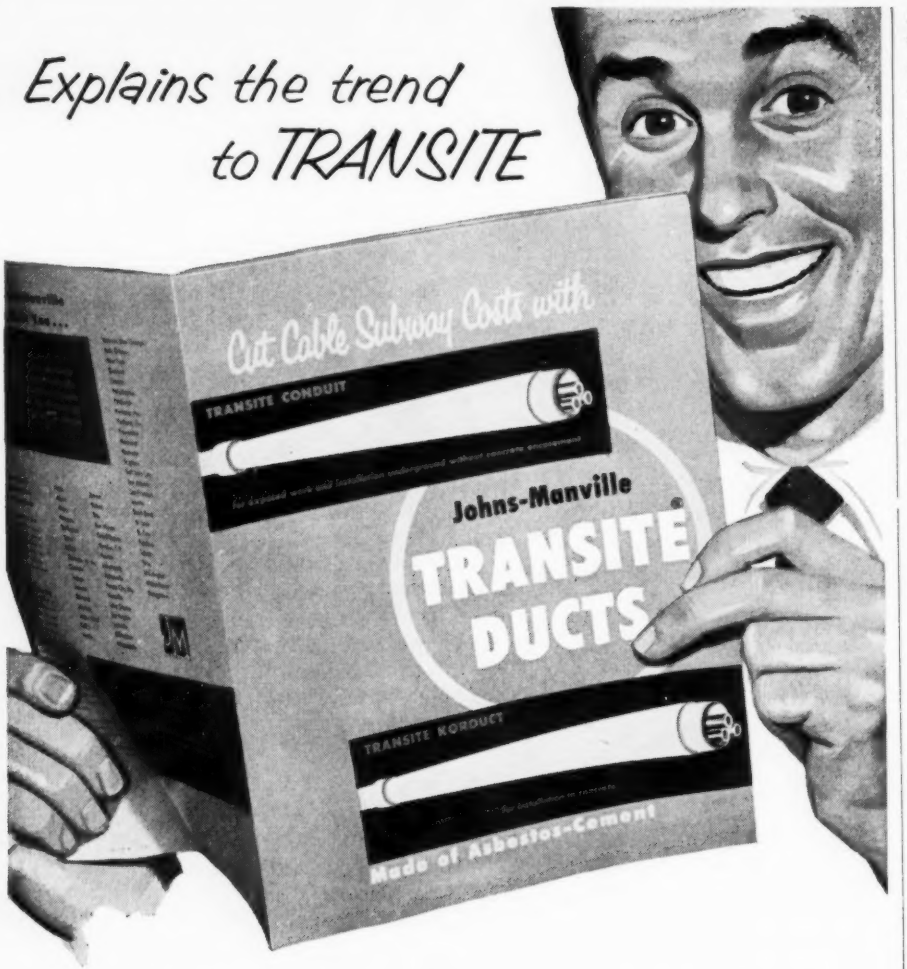
First, I would like to say that our residence extension development is greatest in some of our smaller towns and that these towns have a larger extension development than many of the more prosperous larger towns in the nation. The eight exchanges having the greatest residence extension development among Southern Bell exchanges in the state (Georgia) are Waynesboro, Camilla, St. Simons, Fort Valley, Newnan, Savannah Beach, Louisville, and Thomasville in that order. Their development ranges from 14 per cent to almost 18 per cent of main residence telephones.

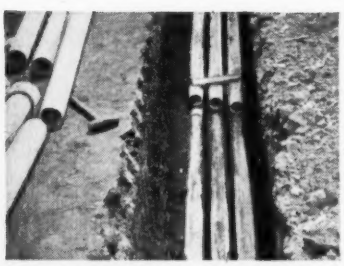
Our objective for 1954 is a 12 per cent development in each of our exchanges. We have observed that a number of residence extensions are being installed within a month after main service was connected. Therefore, we are making a special effort to sell customers on extensions on their initial request for service or on each change of location.

Last Christmas we inaugurated a program to sell extensions as Christ-



XUM



**Transite Conduit** is as economical for main banks as for lateral construction. It also saves maintenance.

**Unusually corrosive soil** required Transite Duct to replace another type in this telephone cable system.

## write today for your free copy

THIS EASILY READ BOOKLET tells why more and more telephone companies now use Transite® asbestos-cement ducts—an improved, permanent type of cable protection that costs less. The ducts, being inorganic and nonmetallic, cannot rust . . . are immune to electrolysis . . . resist soil corrosion. They withstand all normal stresses. Thus, maintenance is practically eliminated.

**Transite Ducts save installation costs.** The sections, being 10 feet long, mean fewer joints in the completed line. Lightweight, easily handled, they are readily assembled and disassembled.

In direct buried lines, the tight joint provided by Transite Conduit excludes water and silt from duct interior. This eliminates cleaning of ducts. Additional savings are realized by pneumatic rodding instead of the hand rodding that is necessary with less effective joints that, being less effective, permit leakage.

**Other features** of Transite Ducts are also covered in the new booklet, EL-29A. Write Johns-Manville, Box 60, New York 16, N. Y. In Canada, 565 Lakeshore Rd. E., Port Credit, Ontario.

**Johns-Manville TRANSITE DUCTS**


mas gifts. We provided them gift-wrapped, so that the customer could deliver them and set up several arrangements whereby the customer could pay for them. This program was highly successful. . . . We had a highly successful program for Mother's Day. . . .

In nearly all of our offices we are augmenting this program with displays of gift-wrapped telephones and colored telephones in transparent cellophane wrapping. In addition, we are using public office cards, bill inserts, truck signs, newspaper and magazine advertising to promote this program. A great many gift extensions are being sold via telephone canvass by the girls in our commercial and other departments.

**Color**

Right here I would like to revert back to the "Merchandising" phrase again, especially that part pertaining to making goods and services more appealing to the customer. Many commodity producers found that the color of a product or its packaging can have a lot to do with its sales. We don't have too much latitude with this in the telephone business, but we do have some and the telephone industry is beginning to take advantage of it.

As I mentioned in connection with coin telephone booths, attractive eye-arresting colors increase usage. We are also finding that telephones in color have a lot of appeal and can be a great aid in selling extension telephones.

This year the Bell System is going all out to promote colored telephones. You may have noticed our advertisements in a number of "Home" magazines lately and Western Electric ads in six national magazines with greatest circulation. They were all two-page spreads in full color and promoted the attractiveness of colored telephones.

As people generally have become more prosperous they have become more conscious of color in decorating their homes. We have telephones, and Independent manufacturers are producing them also, in colors that will fit in with almost any scheme of interior decoration. Our primary motive is not to change the color of main telephones but to sell extensions on the basis of their attractive color. In the automobile industry it is felt that attractively colored cars have had a great deal to do with the increasing number of two-car families. Daddy wants a blue one and mama wants a red one with a Sun Valley grey top.

With the reasonable cost of extension telephones many families may be able to afford the color tastes of not only mother and dad but one or two of the kids as well.

Other telephone companies besides

those in the Bell System might well take advantage of this nationwide promotion of colored extension telephones. We feel that this promotion will do a great deal toward making telephone service more valuable and toward bringing into the telephone industry a greater share of the consumer's dollar.

Another good income producer in our business is the Classified Telephone Directory. To more and more of our directories we are adding yellow-page sections. With carefully planned classified sales campaigns we find the yellow pages growing in value to the exchanges they serve and growing in value to our firm as a source of income.

Another directory matter that is not large but should not be overlooked is the Additional Listing. Many can be sold for little effort. Many business firms find it of value to have the business telephones of their salesmen and representatives listed in the alphabetical section of directories. And many families are having the names of their "teen-age" members listed.

Here I would like to take another page from the experience of our automobile manufacturers and their dealers and other outside competitive business as well. For example:

You go out to buy an automobile. The basic car without accessories costs $1,700. But that isn't all. By the time you finish adding the "gadgets," such as special glass, radio, fluid drive, power brakes, automatic steering, the extra tire and so forth, it will cost you around a thousand dollars more.

The extra items aren't essential, but they are desirable. And other businesses have made a fetish out of the wants of customers, until there is little difference between needs and wants—and, incidentally, they have made a nice profit in the doing.

**"Extra" Services**

A competent authority believes that the difference between a depression and a boom is the degree with which people's wants are satisfied. We have hardly passed the "need" stage in our business. What about the telephone customer's desires and wants. Just this year we started a concerted program toward finding out what our customers want and desire in the way of extras with their telephone service. Here are a few of them. You may have seen them listed in some of our recent national advertising.

Foremost among the new "extras" I think is the Automatic Telephone Answering Set. Attached to a telephone, it automatically answers calls when the subscriber is out, gives callers a message the subscriber recorded and enables the calling party to leave half-


# TELO-CATER*

Patent No. 2142304-Pat. pending *Reg. U. S. Trade Mark

1. **Locates shorts, crosses, grounds and opens in cable, drops and aerial wire without necessity of climbing poles.**
2. **Cuts trouble shooting time and gas mileage.**
3. **Identifies pairs in cable.**
4. **Locates buried conduit, water and gas pipes.**
5. **Locates concealed wiring between walls in building.**

## How the TELO-CATER works:

You attach your cable tone to your troubled line either in the office or in the field with your line tapper; then you follow the tone with the TELO-CATER until the tone either stops completely or greatly diminishes. This is where your trouble is and it can be located within an inch. You can locate most troubles in open aerial wire without leaving your car. Ordinarily if the trouble is in cable you will have to extend your exploring core closer to the cable than you would in either drop wire or open aerial wire.

## Trouble in drops

Trouble in drops may be easily and quickly located by listening for the tone at each drop to see if the tone has gone by or stopped there. If the tone is heard in the drop and enters the house you know the trouble is inside the house. You simply follow the tone until it stops or greatly diminishes, that is where your trouble is located. The TELO-CATER can be used with most regular tone generators.

## Simple design

The TELO-CATER unit consists of a vacuum tube amplifier contained in a metal cabinet finished with a baked slate gray crackle enamel finish. Two exploring coils, one mounted with a short length of composition tubing for a handle, the other fitted with a ferrule to fit a 1¼" standard tree trimmer extension section with 20 feet of shielded cable for plugging into the amplifier unit and a line tapper also adapted to fit the 1¼" tree trimmer extension section.

*Complete TELO-CATER unit and attachments*

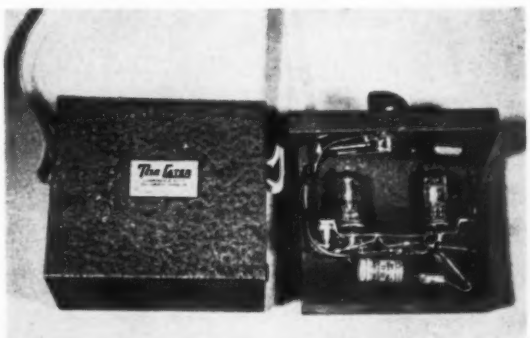
## Maintenance and repair

The TELO-CATER very seldom gives any trouble, but if trouble develops the unit should be returned to the factory. It will be repaired for a nominal fee and returned in ten days.

## Order direct

All TELO-CATER units are sold with strictest satisfaction guarantee. All orders are shipped direct from the factory. Write or phone for prices and delivery schedule.

**CUMMINGS & NOTT**
**Philomath, Oregon**



*TELO-CATER unit open to show simplicity of design. Pilot light indicates when the set is on.*

# "YANKEE" TOOLS for Telephone Service

SERVICE IS THEIR BUSINESS, TOO!

No. 2101 Bit Brace—with smooth, positive ratchet action, quick-centering ball bearing chuck and patented sweep action (no play or binding), unbreakable hard rubber handles.

No. 2150 Bit Extension—bits will not loosen or jam in socket. Takes large range of bits. Chromium plated.

No. 130A Spiral Driver—the driver that *turns* while you *push*. Easy to operate, powerful, it tightens or loosens screws and small nuts quickly and easily.

No. 41 Push Drill ("100 PLUS") all-metal, highly finished. Magazine handle holds eight drills, from 1/16" to 11/64".

In the enviable reputation for good service that the telephone companies have earned, the contribution made by linemen and maintenance men is outstanding. And we at "YANKEE" are proud of the part "YANKEE" TOOLS have played in this achievement. For over 50 years "YANKEE" TOOLS have been "standard equipment" with service men. And every year more and more go into telephone service.

**NORTH BROS. MFG. CO.**
**214 West Lehigh Ave.,**
**Philadelphia 33, Pennsylvania**

DIVISION OF STANLEY TOOLS

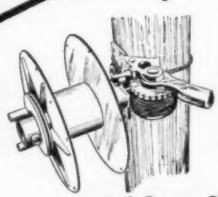
STANLEY
Reg. U.S. Pat. Off.



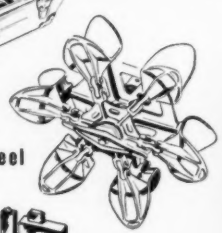
# GENERAL MACHINE PRODUCTS COMPANY, INC.
7th & Wood Sts.
Philadelphia 6, Pa.

- Aerial Tents
- Cable Benders
- Cable Blocks
- Cable Lashers
- Coaxial Cable Tools
- Lashing Wire Clamps and Grips
- Portable & Power Reels

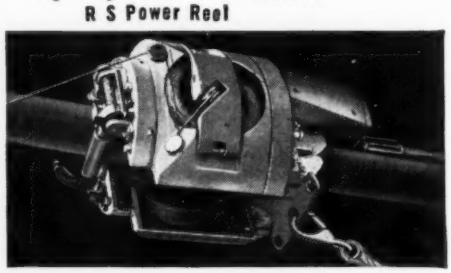
Pressure Testing Kit

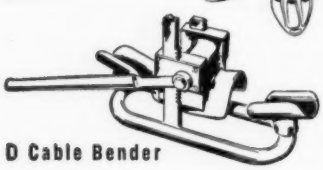


R S Power Reel



C R Power Reel





D Cable Bender

Distributed by GraybaR

B, C, D & E Cable Lashers

Special Purpose Tools To Specifications
***Literature on Request***

Over 250 various items of Line Construction Tools, Maintenance & Pressure-Testing Equipment in stock for immediate Shipment

SPECIALIZED COMMUNICATIONS EQUIPMENT SINCE 1918

GMPCO


minute recorded messages which the subscriber plays back when he returns. . . .

Some other devices we now have available or will soon have available are:

A Light-Up-Dial Telephone with a dial that is illuminated as soon as the handset is picked up. This makes it easy to dial in dark and dimly-lit rooms and is ideal for use in bedrooms, nurseries, sickrooms and hallways—whenever it is desirable to have little or no illumination.

Volume Control Telephone, which makes hearing easier in noisy locations. It is equipped with a control which enables the listener to increase the sound volumes as required for best individual results. It should be a boon to many people with impaired hearing.

Cut-Off Switch on a regular telephone which enables the user by pulling up a special knob to temporarily cut off any extensions on the same line, so no one can overhear elsewhere in home or office. Replacing the handset after use automatically restores extensions back to service.

Retractile cord, which has been available on a limited basis, has a built-in curl which lessens tangling and catching on furniture. It pulls out the full length easily and just as easily springs back into a short coil when not in use.

No-Hands Telephone. This set is just going into production and I think will be a great deal more than an "extra" in usefulness and as an income producer. There is a microphone in the base of the set into which the user can talk from a distance of several feet. The receiver is a small loud speaker which is placed near the telephone set. The set used is almost the same as our new 500 set and has the regular cradle and handset which can be used when it is not desired to use the no-hands feature.

These are just a few of the things that are in the near future. There will be others to come no doubt.

In our approach to selling existing services better and to selling new services and the use of new devices we must emphasize the fact that we are making our services more valuable to our customers and must sell this value to our customers, for if the customer fails to be sold on the value of a service he will not subscribe to it long.

In our selling, in our merchandising we must be dynamic, we must be sold ourselves. We must have an imaginative and forward outlook. Just because we do not personally care for a new service or device we must not let our prejudice make us overlook the fact that it may be of great value to our customers. We may not like vanilla, but a lot of people do. There is a great range of tastes and needs in communications, and now is our opportunity to cater to them.

By creating new markets, desires, wants and customers I believe we can

exercise more control over our economic circumstances, rather than being wholly subject to them.

I believe that we will be sure to earn public approval, build a more profitable business and make economic swings less difficult. Essential to the success of this new era of communications services we are entering I believe is our state of mind. If we are sold on it, seek out and find opportunities and take every occasion to sell our customers and potential customers on it I feel sure we will succeed and our services will be of more value than ever before to our customers and to ourselves.

V V

## "Ping" Fairly Celebrates 45 Years with Kellogg

C. F. "Ping" Fairly, district manager of Kellogg Switchboard & Supply Co. in Los Angeles and well known among West Coast telephone men, celebrated his 45th year with Kellogg in January.

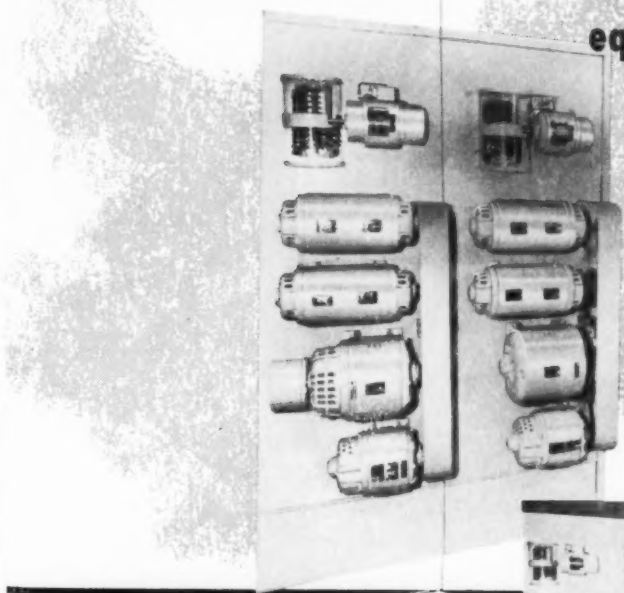
President James H. Kellogg, and other company officers and sales executives paid tribute to Fairly at a dinner held recently in Chicago. H. G. O. Weiler, vice president of the Southern Nevada Telephone Co., a guest at the dinner, joined with the company to commend "Ping" on his long and successful career in telephony. An engraved gold wrist watch was presented to Mr. Fairly by the company.

**JAMES H. KELLOGG, president of Kellogg Switchboard & Supply Co., presents C. F. "PING" FAIRLY with an engraved gold wrist watch at a dinner in Chicago honoring his 45 years with the company.**

"Ping" was born in 1888 in a sod house on the northwestern plains of Colorado where his parents settled after moving from the Midwest in a covered wagon. In 1893, the Fairly family moved to Covina, Cal., where "Ping" attended elementary and secondary schools.

In 1906 he was initiated into the telephone business when he took a part-time job as a helper on a Kellogg installation. He continued with instal-


ESCO VERTICAL ringing equipment . . .



a modern exchange

complete satisfaction

Keep ahead of constant pressure to modernize and improve service, while holding space and cost at a minimum. Install ESCO vertically-mounted power and ringing equipment, just as the General Telephone Company of California did at The Baldwin Park Exchange—

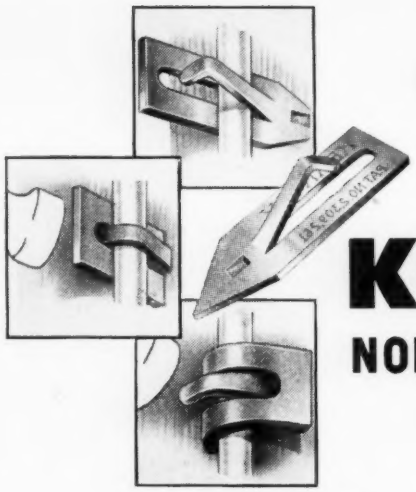
EXCLUSIVE ESCO FEATURES — *space-saving vertical mounting*, completely pre-wired to fit into power line-ups. *Advanced Interrupter design*, for accurate and positive timing. *Improved Idler Drives*, with single-point adjustment that stays, for smoother operation, longer life — plus lubricated for life bearings throughout, quality construction of every component. All rotating parts dynamically balanced, and each assembly fully tested.

Factory built to your particular specifications, ESCO Vertical ringing equipment is available in standard or special power ratings and frequencies to meet your present and anticipated needs.

*Write today for full information.*

ELECTRIC SPECIALTY CO.

176 South Street, Stamford, Conn.



AVOID STATIC DISCHARGE WITH

KEARNEY

NON-STATIC GROUND WIRE CLIPS

You need never be bothered with complaints about static caused by gaps between the ground wire and clip. Even if this tight-gripping clip loosens in the wood, it will remain tight around the wire indefinitely.

Kearney Non-Static Ground Wire Clips are inexpensive to use, quick and easy to install.

*Specify* KEARNEY PRODUCTS

JAMES R. KEARNEY CORPORATION
4224-42 Clayton Ave., St. Louis 10, Missouri
229

*For Better Construction-For Safer Maintenance*

TWO TOP QUALITY ELECTRIC LACING TWINES

FROM THE SAME SUPPLIER

THE LINEN THREAD CO., INC.
418 Grand Street, Paterson 1, N. J.
Boston 10 • Chicago 10 • San Francisco 5
Baltimore 3 • Philadelphia 6 • Gloucester

lation work until 1910 when he had to decide between a $4.00-a-day first-class installer's job or a $1.75 shipping clerk's position in Kellogg's San Francisco office. "Ping" chose the shipping department because it offered him the opportunity of learning all phases of the telephone business. He supplemented his shipping clerk's pay by pitching with various San Francisco baseball teams on Sundays for $25 a game.

Following a move into the office as an order clerk, "Ping" got his chance to try out his sales ability and he proved a success. In 1913, Kellogg sent Mr. Fairly on a "pioneering" sales trip to Alaska where he succeeded in selling Kellogg installations in Juneau, Skagway, Valdez and Anchorage. These installations, the first Kellogg had sold in this new territory, included switchboards and other equipment.

When Mr. Fairly returned to the United States, he was transferred to the Portland, Ore., territory, but after three months he was offered the opportunity of taking over the Los Angeles territory. He has been there ever since.

During his career with Kellogg, "Ping" Fairly has not only been able to see, but also participate in the impressive growth of many Independent telephone companies. One of his most pleasant associations has been with the Southern Nevada Telephone Co. which stems from his first contact in 1917 with the company president, Samuel Lawson.

At that time the town of Las Vegas with 1,000 people was being served by a Kellogg magneto switchboard. Las Vegas grew very little until 1929 when construction of Boulder Dam was started. Kellogg then installed a nine-position Kellogg manual switchboard. Now a booming tourist attraction, Las Vegas will soon be using Kellogg Crossbar dial switching equipment which is presently being installed.

V V

### Doss Named Marketing Manager By Electric Products Co.

Gordon J. Berry, president, The Electric Products Co., Cleveland, announces the appointment of G. J. Doss as manager of marketing. He will be responsible for the coordination of sales and promotion of all divisions of the company.

Mr. Doss joined The Electric Products Co. in 1946 as manager of the Cleveland district office and in 1951, was advanced to assistant sales manager. In 1953, he was appointed general manager of Electric Products' switchboard and control division. His experience has been chiefly in electrical sales and engineering.

## Automatic Electric Assigns Williams, Smith to New Posts

Automatic Electric Sales Corporation has announced the following new executive assignments:

H. S. Williams, vice president, moves to New York to head the eastern district sales organization. He replaces

H. S. WILLIAMS

T. A. Logan, who returns to Chicago to join International Automatic Electric Corp.

H. C Smith, vice president, succeeds Mr. Williams and will direct the field sales force in addition to his present duties as manager of industrial sales.

Mr. Williams, a native of Wisconsin, is a veteran of 30 years Automatic Electric service. He began his career

H. C. SMITH

in manufacturing, after completing the Automatic Electric Training School course in 1925, later transferring to sales.

In 1932, he was placed in charge of specialty sales, and one year later named manager of the eastern district


at Delta Telephone and Telegraph Co.

It's C&D Calcium Batteries for EXTRA life

One of C&D's typical installations in use at the Delta Telephone and Telegraph Co., Courtland, Calif. The 24 PlastiCal (lead-calcium) cells, Type PCE-420, have a 420 A.H. capacity.

In the growing community of Courtland, California, the Delta Telephone and Telegraph Co. relies on the continuous, dependable service provided by C&D PlastiCal batteries. For here, in the historic Delta region, the Delta Telephone and Telegraph Co. has found that C&D has the answer to telephone battery needs.

**When you order your next telephone battery, specify C&D. For with C&D, you get:**

1. **One-piece, permanently-sealed plastic case. Entire unit is shock-resistant, lighter, and more compact than glass or rubber.**
2. **Exclusive suspended and supported plate construction eliminates leaks due to internal stresses.**
3. **Easier maintenance, because patented Post Seal eliminates acid creepage.**
4. **Lower shipping costs. Light plastic case reduces total in-place cost.**

**You can order C&D batteries from your equipment supplier.**

Write for bulletins!

**For details and specifications on C&D telephone batteries, write for Bulletins T-527 and T-528.**

C&D BATTERIES, INC.
of Conshohocken, Pa.

Manufacturers of Industrial Batteries since 1908

**Sales and Service Offices in Principal Cities from Coast to Coast**

in New York. He was named vice president in 1937. In 1941, he was called to active duty by the U. S. Navy, serving overseas in the Far East, and for a while on Admiral Mountbatten's staff in Ceylon and India. He retained his rank of captain in the U. S. Naval Reserve.

At the end of hostilities, Mr. Williams returned to the general offices in Chicago, to assume responsibility for government sales. In 1946, he was named to head the field sales organization, the position he held prior to his transfer to New York.

Mr. Smith a native of Elgin, Ill. has been with the Automatic Electric Group since 1924.

After completing the training course in the Automatic Electric schools, he held a number of installation and operating assignments in various parts of the country and then transferred to the sales organization in 1934. In 1939 he was appointed manager of the district office in Cleveland in which capacity he supervised sales of Automatic Electric products in the central eastern states. In 1943, he was named vice president of Automatic Electric Sales Corp. and placed in charge of the Pacific Coast district with headquarters in San Francisco. In 1953 he returned to the general offices in Chicago as manager of industrial sales.

V V

### Duff-Norton of Pittsburgh Buys Company in Danville, Ill.

The Duff-Norton Mfg. Co. of Pittsburgh has purchased, effective Mar. 1, 1955, the Coffing Hoist Co. of Danville, Ill., and will operate the firm in the future as the Coffing Hoist division of Duff-Norton Co.

Duff-Norton is the world's oldest and largest manufacturer of lifting jacks and makes a large line of ratchet, hydraulic, air motor and worm gear jacks. Coffing produces a wide variety of hand and electric-operated hoists and allied products.

Duff-Norton said it was changing its name from The Duff-Norton Mfg. Co. to Duff-Norton Co. in the interest of brevity and clarity.

President Walter I. Floyd of Duff-Norton said: "The acquisition of this leading producer of hoists is an important part of our diversification and expansion program. The move gives both companies an entry into a much larger segment of the lifting equipment field and the combined technical skills and experience will enable us to serve our customers better."

Operations and personnel will continue unchanged at the Coffing plant except that Fredrick W. Coffing, president and co-founder of the 26-year-old company, will retire. He will continue to be associated with the Coffing Hoist division, however, as a consultant. Mr. Floyd will be president of the Coffing Hoist division as well as president of Duff-Norton.

J. R. Coffing, who has been vice president-sales for Coffing Hoist; J. F. Bookwalter, vice president-manufacturing; and George Buck, secretary-treasurer, will continue to direct the affairs of the Coffing Hoist division as a management committee.

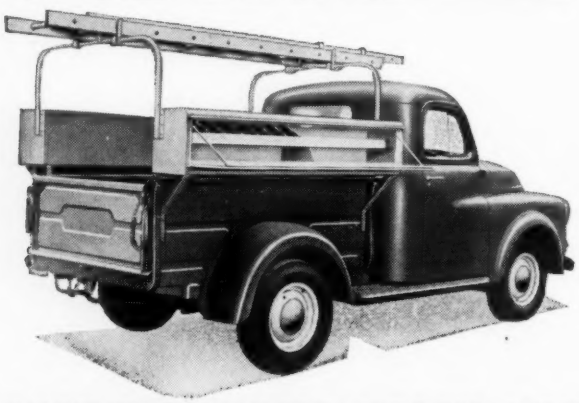
V V

### Wiremold Co. Elects President And Executive Vice President

Following a meeting of the board of directors recently, D. Hayes Murphy, founder of The Wiremold Co., Hartford, Conn., announced the election of John Davis Murphy as president and Robert Henry Murphy as executive vice president.

The new president has been with The Wiremold Co. since his graduation from Dartmouth in 1934, working in all of the company's factory and office departments. He was elected vice president in 1941, a member of the board


STAHL SIDE BOXES



CONVERT YOUR "PICK-UP"
TO A MODERN SERVICE TRUCK!

Quickly...and at low cost...you can mount these All-Steel, Welded Side Boxes on ANY MAKE OR MODEL of pick-up truck. Keep tools and equipment dry, safe, organized.

*Write today for Literature and Prices*

STAHL METAL PRODUCTS, INC.
3490 W. 140th ST., CLEVELAND 11, OHIO

THE ABC BOOKS CAN HELP YOU WITH YOUR PLANT TRAINING PROBLEMS

**Hundreds of telephone companies in the United States, Canada, and other countries give copies of Vol. I and Vol. II of "ABC OF THE TELEPHONE" to every plant man.**

HERE IS WHY:

They are written in the language of the plant man.

They help new men learn faster. Experienced men gain knowledge and appreciation of the job.

HERE ARE SOME OF THE SUBJECTS INCLUDED:

VOLUME I—84 PAGES.
Circuits, transmitters, receivers, induction coils, generators, ringers, relays, line protection, dials, drop wire installation.

VOLUME II—80 PAGES.
Station installation, fault locating, circuit analysis, maintenance, testing outside plant, loading coils, etc.

HERE ARE THE REASONABLE ABC PRICES:

Single copies .....$1.50 ea.
2-25 copies ..... 1.35 ea.
26- 50 copies .....$1.20 ea.
51-500 copies ..... 1.05 ea.
500-1000 copies.....$0.95 ea.

USE THIS CONVENIENT ORDER BLANK TODAY:

FRANK E. LEE, *Publisher*
1751—183rd St., Homewood, Illinois
Please send:
_____ Copy(ies) ABC OF THE TELEPHONE—VOLUME I
_____ Copy(ies) ABC OF THE TELEPHONE—VOLUME II
NAME_____
STREET_____
CITY AND STATE_____

of directors in 1947, and executive vice president in 1952.

Robert H. Murphy, the new executive vice president, has been with the company since his graduation from Dartmouth in 1936, starting as a clerk in the factory office, then as a machine operator, and a draftsman. He was elected assistant treasurer in 1941, has served as factory manager since that time, was elected to the board of directors in 1947, and in 1952 was elected vice president.

Both new chief executives made an early start with the company by working during school vacations at many jobs throughout the plant. Over the years they have played a major part in formulating the policies and objectives of the company and will continue to be guided by the principles that have become traditional with Wiremold since its founding 55 years ago.

D. Hayes Murphy will serve as chairman of the board of directors.

V V

### Lenkurt Electric Makes Three Sales, Service Appointments

Three new assignments in the sales division of the Lenkurt Electric Co. at San Carlos, Cal., have been announced by E. G. Hall, general sales manager of the carrier and microwave manufacturing firm.

Edwin J. Rudisuhle was named to head sales to Independent telephone

E. J. RUDISUHLE

companies and industrial users; Weston C. Fisher was placed in charge of Bell company sales, and Robert E. Graham was appointed manager of engineering service to customers.

All three are veterans in the communications field. They have a combined total of nearly 60 years experience in communications, the company reports.

Mr. Rudisuhle joined Lenkurt in


TAKE A BIG STEP TOWARD SAFETY WITH DUO-SAFETY LADDERS

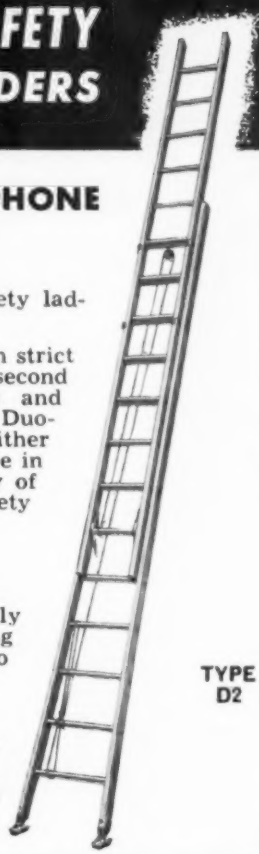
... CUSTOM DESIGNED FOR TELEPHONE MAINTENANCE WORK!

Here's one fine example of the many Duo-Safety ladders ideal for telephone maintenance work.

Type D — a truly great extension ladder built in strict accordance with safety regulations. Rungs are second growth hickory, reinforced with steel rods and equipped with special automatic locks and Duo-Safety's famous Safety Shoes. Made with either straight or parallel side rails, Type D is available in one, two or three sections — in a large variety of sizes. Write for free catalog on all Duo-Safety ladders.

IMMEDIATE DELIVERIES!

Duo-Safety ladders will be shipped immediately upon receipt of order! A planned stock-piling program assures really fast action — there's no delay the Duo-Safety way!

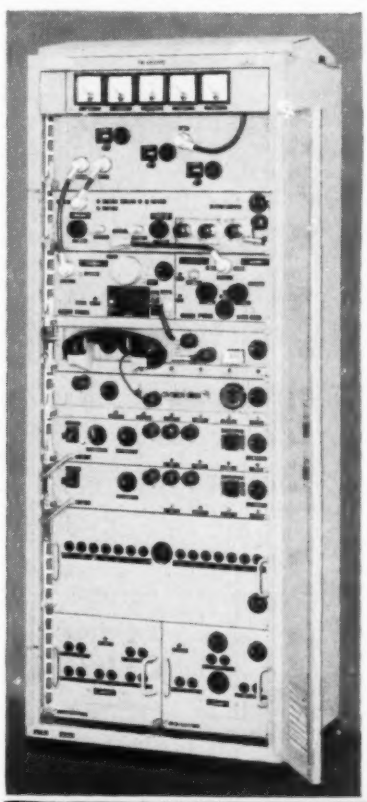


TYPE D2

*For Information, Contact Your Supply House, or*

DUO-SAFETY LADDER CORP.
809 Ninth Street • Oshkosh, Wisconsin



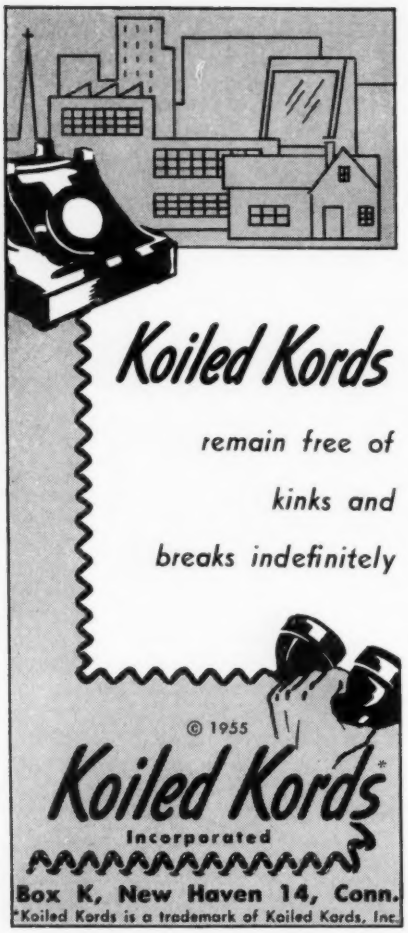


SIXTY-CHANNEL UHF FM RADIO SYSTEM OF ADVANCED DESIGN

Type FM60/2000 Radio System transmits up to 60 voice channels in a frequency range of 1700 to 2300 mc. Transmitting power is 5 watts and a single antenna is employed for both transmitting and receiving. The maximum frequency swing is 0.5 mc, and the transmitted frequency band is 12 to 252 kc. A similar system type FM60/300 operating in the frequency band 235 to 328 mc is also available. These radio systems operate in conjunction with the type F60 carrier-telephone system, which provides up to 60 3400-cycle telephone channels in 5 12-channel groups.

A complete FM60/2000 Radio Terminal requires a single cabinet.

RADIO ENGINEERING PRODUCTS
1080 UNIVERSITY STREET, MONTREAL 3, CANADA
Telephone: UNiversity 6-6887 Cable Address: Radenpro, Montreal
MANUFACTURERS OF CARRIER-TELEGRAPH, CARRIER-TELEPHONE AND BROAD-BAND RADIO SYSTEMS



W. C. FISHER

R. E. GRAHAM

1952 after six years with the Civil Aeronautics Administration. He was in charge of CAA radio engineering in the Pacific area and supervised the engineering and installation of a number of multi-channel radio links.

Mr. Rudisuhle's experience in communications also includes three years with the Federal Communications Commission as a field and laboratory engineer and two years with the U. S. Coast Guard as a radio officer. He is a graduate of the University of Minnesota.

Mr. Fisher was vice president of Norwesto Communications in Kenora, Ontario, when he joined Lenkurt in 1951. Previously he was a district sales engineer for the RCA Victor Co., Ltd., in Canada. He was with RCA first in Montreal and later in Winnipeg.

During World War II, Mr. Fisher was a wing commander in the Signals Branch of the Royal Canadian Air Force. He holds an M.S. degree from the University of Saskatchewan, and he also did graduate study at Purdue University.

Mr. Graham was with the Long Lines Department of American Telephone & Telegraph Co. 21 years. His positions with AT&T included chief test-board man at Denmark, S.C., and Miami, Fla., and division telegraph service supervisor at Atlanta, Ga.

Mr. Graham went to Tokyo in 1947 for one year as communications engineer for the Department of the Army. He then joined Communications Co., Inc., of Coral Gables, Fla., and was sales manager of that firm when he resigned to become an engineering representative at Lenkurt in 1953.

V V

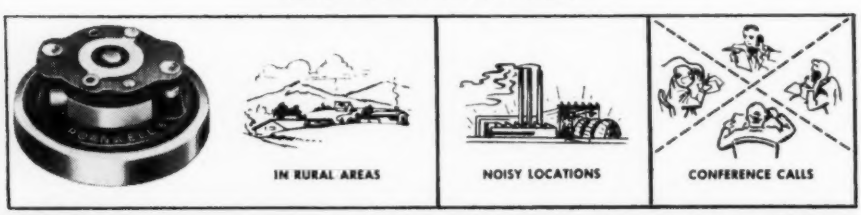
## Cook Electric Company Opens District Office in Baltimore

Cook Electric Co., Chicago 14, has opened a new district office at 2503 St. Paul St., Baltimore 18, Md., with George C. Milan as district manager, according to Charles H. Brunell, sales manager and vice president.

Mr. Milan was formerly installation engineer with Aero Engineering Co., New York, N. Y., division of Garrett Corp., Los Angeles, Calif. Previously he was a power plant design engineer with Fairchild Aircraft division and

Now you can end subscribers' complaints of poor voice reception, quickly and inexpensively . . . with the new Roanwell RA-1H receiver. This new element supplies almost 4 times the acoustical energy and its output is about 5 d.b. higher, over the normal speech response range, than receivers commonly in use.

WRITE FOR DETAILED DATA SHEET




R/C Roanwell CORPORATION
662 PACIFIC STREET • BROOKLYN 17, N. Y.

WHERE ACCURACY COUNTS

KENNECOTT CABLE

You can depend on every reel of Kennecott Telephone Cable to deliver top-notch service. That's because Kennecott uses quality-control methods in every phase of manufacture.

From the raw material right to the finished cable, careful checking eliminates any inferior product. That's why you can always count on Kennecott for the finest in cable.

Call your nearest Chase sales office for complete information.

**CHASE BRASS & COPPER CO.**

Waterbury 20, Conn.

DISTRIBUTOR FOR

**KENNECOTT WIRE & CABLE CO.**

*Subsidiaries of Kennecott Copper Corporation*

CHASE WAREHOUSES and OFFICES:

| | | | | | |
|---|---|---|---|---|---|
| Albany† | Chicago | Detroit | Los Angeles | New York | St. Louis |
| Atlanta | Cincinnati | Grand Rapids† | Milwaukee | Philadelphia | San Francisco |
| Baltimore | Cleveland | Houston | Minneapolis | Pittsburgh | Seattle |
| Boston | Dallas | Indianapolis | Newark | Providence | Waterbury |
| Charlotte† | Denver | Kansas City, Mo. | New Orleans | Rochester† | (†sales office only) |

**You can save money**

by
contracting
your work
to
experienced
Engineering
and
Construction
Folks

—

We're known
from
Coast to
Coast—

—

Ask the man
who knows us
about our
"Know How"

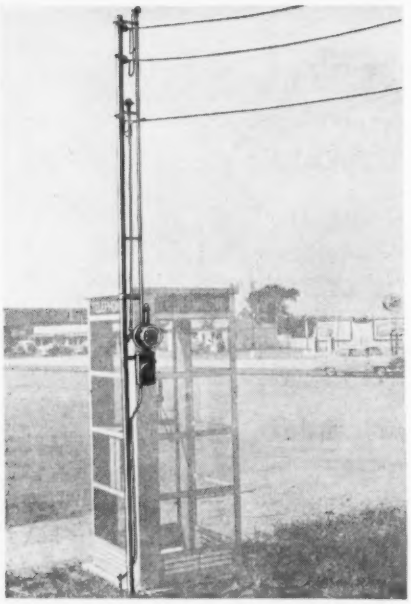
—

**GUSTAV HIRSCH ORGANIZATION, INC.**

1347 WEST 5TH AVENUE

COLUMBUS 12, OHIO

Telephone: HUdson 8-0611



**TELEPHONE BOOTH MAST**

**Fits any outdoor booth, meets all specifications.**

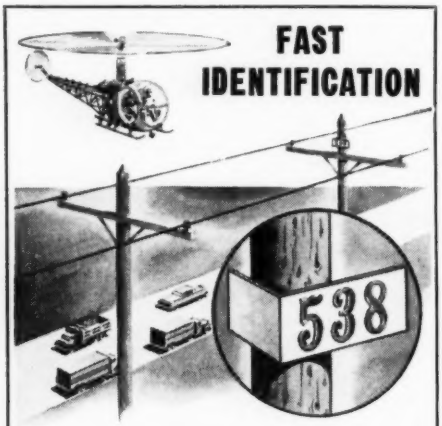
**Completely portable. To change locations, disconnect and remove mast unit from ground-sleeve. Drive new ground-sleeve at new location.**

*Write for complete information, prices, specifications to:*

**Utility SERVICE CO., INC.**

*1630 Thirteenth St. Racine, Wisconsin*






**FAST IDENTIFICATION**

**POLE NUMBERS FOR AERIAL PATROL BY**

*"They Outlast the Pole"* **PREMAX**

Premax enameled and plain aluminum pole markers make aerial trouble spotting fast, easy and economical. Made to withstand any weather, designed for extremely high visibility. For R.E.A., telephone and general utility installations. Ask your jobber, or write

**PREMAX PRODUCTS**

Div. Chisholm-Ryder Co., Inc.
5566 Highland Ave., Niagara Falls, N. Y.

G. C. MILAN

also with the Glen L. Martin Co. He is a member of the Society of Automotive Engineers, Institute of Aeronautical Sciences, and American Ordnance Association.

V V

## Graybar Elects Wallace A Vice President

Douglas Wallace was elected a vice president of the Graybar Electric Co., at the annual meeting of the board of directors held on Mar. 18, W. E. Henges, president, has announced.

Mr. Wallace started as an assistant accountant at Seattle in 1922, and soon transferred to New York where he rose through the positions of accountant, senior accountant, assistant secretary and assistant merchandising manager. In 1938 he was appointed district manager at Jacksonville, returning to New York in 1940 as assistant general sales manager. He was general communications and merchandising sales manager for nine months in 1943 until he became district manager at Pittsburgh. He has been at the New York executive offices since January, 1955, when he was appointed assistant vice president. Mr. Wallace is a member of the board of directors of the company.

V V

**"Any strong nation of free workers can survive the ordeal of going broke, and can even come back stronger than ever when the tide of fortune again turns its way. But paste this in your hat: No country is strong enough to make a comeback when the people lose their sense of personal responsibility . . . and their fundamental respect for the system that underlies all economic progress—the private property system—under which all men have the same opportunity. . . ."—West Point, (Miss.) DAILY TIMES LEADER.**


**TOLL TICKETS**

I-L Out 40c per M
Minimum Quantity 20M
*Top Quality White Bond Paper*
*Telephone Printing of All Kinds*

**CULLOM & GHERTNER CO.**

600 21st Avenue N., Nashville 4, Tenn.

**INSPECTION SERVICE**

Of poles, crossarms, and preservative treatments. Analyses of wood preservatives. Consulting and specification writing. Inspectors stationed throughout U.S.A.

**A. W. WILLIAMS INSPECTION CO.**
MOBILE, ALABAMA
ESTABLISHED 1921—MEMBER A.C.I.L.

**What You Want When You Want It**

**Immediate Shipment from Nearest Warehouse Points**

**TELEPHONE & POWER SUPPLY, INC.**
TOPEKA, KANSAS PHONE 4-8788

**TELEPHONE PRINTING**

**By People Who Know the Telephone Business**

SEE THE SUTTLE CATALOG

**SUTTLE EQUIPMENT CO.**
LAWRENCEVILLE ILLINOIS

Construction Crews Station Installers
Central Office Installations
Cable Splicers Complete Engineering

**HENKELS & McCOY**
6100 North 20th Street Philadelphia, Pa.
Now Operating in 22 States

**EXPERIENCED CONSTRUCTION GANG AND CABLE MEN AVAILABLE for**

**Missouri • Kansas • Oklahoma • Texas**

**We specialize in Construction Work, Installing, Pole Line, Open Wiring, Aerial Cable, Underground Cable, Splicing Cable, Main Frame, Telephones Rebuilt, Hole Digging, Drafting and Engineering.**

**HAMS' CONSTRUCTION COMPANY**
UNION, MISSOURI

**HARRIS-McBURNEY CO.**

PUBLIC UTILITY CONSTRUCTION

*A complete construction service for the telephone industry*

Construction Crews Engineering
Station Installers Appraisals & Reports
Cable Splicers C. O. Installation
Underground Duct Systems

Telephone 4-6126
P. O. Box 267 Jackson, Michigan

**CABANISS-POGUE COMPANY**
*Consulting Engineers*
Appraisals—Cost and Rate Studies
Financial Assistance
GRANT BLDG., ATLANTA, GEORGIA

**MORTON CONSTRUCTION CO.**
Builders of Outside Telephone Plants
Cable Splicers, Line Crews, Installers
*A service that Satisfies*
Pekin, Illinois • Box 11 • Phone 2515

**MURER & SMITH**
*ENGINEERS & CONTRACTORS*
Engineering—Construction—Installation
A complete service to the Telephone, Electrical and Pipe Line operating companies.
6619 Clayton Road Clayton 17, Mo.
St. Louis Telephone PArkview 7-2747—7-7282

**FLORIDA RESEARCH CO.**
Organizes and Finances
**"TELEPHONE ANSWERING" SYSTEMS**
Big Opportunities — Fast Growing
Interested buying Independent Telephone Companies
Head Office: Babson Park, Florida

**UNDERGROUND CONSTRUCTION**
Cable and Wire Plow
Trenching Machines
*Fully Equipped for Complete Installation*
BJORNSON CONSTRUCTION CO.
Bode, Iowa Phone 2553

**PLASTICS**
Desk Nameplates — Service Results Boards
Door Nameplates — Operators Line Guides
Changeable Numbers — Form & Chart Holders
Murphy Tester Tag Board Partitioned Covers
*Special items made-to-order 1 or 1000*
MARSHALL PLASTICS CO., Phone 304
308 North Morton, Okmulgee, Oklahoma

**CYRUS G. HILL**
ENGINEERS
PLANT — TRAFFIC — COMMERCIAL
VALUATIONS AND ORIGINAL COST
134 S. LA SALLE STREET, CHICAGO 3

**ROBERT E. FOLEY CONSTRUCTION CORP.**
DESIGN—SURVEYS—APPRAISALS—Construction and Maintenance of Overhead and Underground Telephone Plant. Complete supply of poles available for emergency requirements.
48 GRISWOLD STREET
BINGHAMTON, N. Y. TEL. 2-7215

**CREASMAN-MARSHALL CO.**
P.O. BOX 6115
ASHEVILLE, NORTH CAROLINA
CABLE MAINTENANCE
CABLE SPLICING • ENGINEERING
STATION INSTALLATION
PBX AND KEY EQUIPMENT
INTER COMMUNICATIONS SYSTEMS

**SLOAN, COOK & LOWE**
CONSULTING ENGINEERS
Appraisals—Original Cost Studies
Plant, Traffic and Commercial Engineering
120 S. La Salle St.
Chicago 3, Ill. Tel.: FRanklin 2-5924

WE BUILD AND REPAIR TELEPHONE PLANTS FROM CENTRAL OFFICE TO SUBSCRIBER
CABLE SPLICING & REPAIRING
WILTON ELECT. & TELEPHONE CONSTRUCTION CO.
ANDY MUELLER, Engineer
Telephone 21 Wilton Junction, Iowa

**NEALE CONSTRUCTION CO.**
ENGINEERING • CONSTRUCTION • MAINTENANCE
TOPEKA, KANSAS PHONE 4-2621

# "CAN TAKE IT" CABLE
## AT LESS COST AND UPKEEP

For permanent distribution or temporary "by-pass" during road construction, fire—

**5 & 10 pair,** #19 ga. Neoprene ($\frac{3}{32}$" thick)
resists abrasion "tough as a tire"
aerial or underground—(requires messenger)

Color coded—solid tinned copper conductors, rubber insulated (to prevent moisture trouble even if outer jacket is pierced). UNUSED A-1—1000 ft. continuous lengths on no-charge steel reel (less, add 1c ft.).

5 pair $\frac{1}{2}$" O.D. per foot 5c
10 pair $\frac{5}{8}$" O.D. per foot 10c
5 pair (as above) 100-200 ft. coils, foot 4c

**"SPIRAL 4"** 2 pair Neoprene

#18 ga. tinned copper (stranded) rubber insulated conductors—steel reinforcing wires imbedded inside tough Neoprene jacket —$\frac{3}{8}$" O.D.—extremely resistant to abrasion & sway damage—aerial or underground (500 lb. tensile strength). 1320 ft. ($\frac{1}{4}$" mile) continuous length on no-charge reel—connector with 6 mh. loading coil each end—

UNUSED A-1 (1320 ft.) per reel $50.00
(less, per foot 5c)

**NAVY "SHIPBOARD" CABLE**—for that TOUGH run
5 to 60 pair, #22 ga. solid copper, enameled, coded, rubber covered with galvanized steel braid armor.

FLEXIBLE stranded CABLE—NEOPRENE
11, 15, 25 pair—for elevator, crane service—etc.

CO-AX W.E. #720 (braid covered) New, 500 ft. coils per foot, 6c
POWER & GROUND CABLE, #14 to 1/0 single & multi-conductor—exchange & line ground rods. Copperweld & galv. steel.

TWISTED PAIR DROP WIRE

#14 ga. tinned solid copper (hard drawn) rubber insulated, saturated black braid. Unused A-1, 2000 ft. (no-charge reel) ft. 2½c
less than reel, per ft. 3c

Single #14 ga. (as above) for ground wire—4000 foot coils, New A-1 triple braid; ft. 1c

DIRECT BURIAL—parallel pair

#17 ga. copper, Buna or Thermoplastic. 2500 ft. continuous reels, ft. 1¼c (f.o.b. Los Angeles or Chicago).

LEAD CABLE—303 pr. #19 ga. paper

200 ft. length—New W.E. pressurized, no-charge reel. . . . $300.00
BRAID & Lead swbd. cable (ass'd sizes) tell us length & pairs required—we'll quote.

***—Samples on request—***

***We ship on approval—satisfaction guaranteed***

# Telectric Co.

**1218 VENICE BLVD.** **Richmond 2249** **LOS ANGELES 6, CALIF.**

# CLASSIFIED SECTION

Rates 15 cents per word payable in advance. Minimum charge $3.00 for 20 words or less.
Classified advertisements must reach us 8 days before publication date

## FOR SALE

IBM ELECTRIC TOLL BILLING TYPEWRITER; Oasis Air Drier; Kellogg 1000 straight-line and decimonic ringers, Kellogg 925 telephones with dials. Write Walker County Telephone Co., LaFayette, Ga.

50 LINE SIX LINK NORTH ALL RELAY DIAL SWITCHBOARD, three toll trunks, two loop and one simplex dialing, available in 30 days. Address Box No. 3644, c/o TELEPHONY.

STROMBERG-CARLSON 106 2-position C. B. switchboard 360 lines, 31 cords. Good condition. Available immediately. $1500.00. Write Inman Telephone Co., Inc., Inman, S. C.

134 STATION MAGNETO TELEPHONE EXCHANGE, County Seat town. Priced for immediate sale. Galena Telephone Co., Galena, Mo.

RELIABLE MAIN FRAME—800 lines, capacity 700 lines equipped. Will sell in two sections. Clarke County Telephone Co., Osceola, Ia.

NEALE CONSTRUCTION COMPANY AND TELEPHONE AND POWER SUPPLY COMPANY STOCK. Make offer to H. B. Fine, 1431 Topeka Blvd., Topeka, Kans.

## FOR SALE

FORD TRUCK, 1950, Model F-5, 1½ ton, 134-inch wheel base, 38,000 miles, excellent condition, equipped with Powers Special Series 500 light duty line construction and maintenance body, rear working platform, Model 2MBC, 15,000 pound winch, standard SAE power take-off and two speed hanger bearing, Model LMBS pole derrick, 300 ft., ½-inch winch cable. Write M.J.M. Electric Cooperative, Inc., 257 N. Broad St., Carlinville, Ill.

**COMPLETE VHF RADIO TERMINALS**

These are designed for telephone service in the 72-76 mc. band, and are ideal for setting up a communication system along a pipeline, railroad, or in mountainous or bush country. Each terminal consists of the following:

1—Link Radio Type 1498T Transmitter
1—Link Radio Type 1498P Power Supply
1—Link Radio Type 1498R Receiver
1—Budelman 200 watt Power Amplifier
1—Type PP13 Power Supply
1—Federal type 101B V-F Ringer
500 ft.—Type RG 8U Coaxial Cable
2—Welded steel Yagi Antennas—5 element
1—Lister Diesel-Generator set, 2 KW.

**P. J. PLISHNER**
550 Fifth Ave. New York, N. Y.

## FOR SALE

COMPLETE KELLOGG COMMON BATTERY CENTRAL OFFICE AVAILABLE DECEMBER, 1955—10 positions switchboard, three positions recently installed, four frequency harmonic ringers, nearly new 25 AMP flotrol charger, excellent maintenance. Sell all or part. This equipment ideal for exchange that wants to keep growing right up to dial cutover. Can be seen in operation anytime. San Marcos Telephone Co., San Marcos, Tex.

W.E. F-1 trans. capsules—factory rebuilt.... .75
W.E. HA-1 receiver capsules, like new, perfect ..... .50
W.E. #5H Dials, $4.00 ea., lots of 25 to 49—$3.50 ea., 50 to 100—$3.00 ea. Rebuilt.
W.E. #6A Dials—$5.00 ea. 4H .....$2.00 ea.
REBELCO handset conversion kits. F-1 handle, cover plate, 4 cond. cord and saddle....$7.50
W.E. E-1 handles with F-1 unit and 3 cond. cord .....$2.50
W.E. F-1 handles—F-1 and HA-1 units, with cord .....$5.00

*Handset transmitters expertly rebuilt using factory methods at reasonable rates.*

Over forty years of service to the Independent industry.

**REBUILT ELECTRIC EQUIPMENT CO.**
1704 West 21st Place Chicago, Ill.

**INSULATORS**
**War Surplus**
**Signal Corps #1N56**
**with metal lag scew attached**
**3½c ea. minimum order 200**
**f.o.b. Denver**
**Terms 30 days**
**Satisfaction Guaranteed**
***Sample gladly sent on request***

**THE SUTTON COMPANY**
**1839 Champa Denver 2, Colorado**

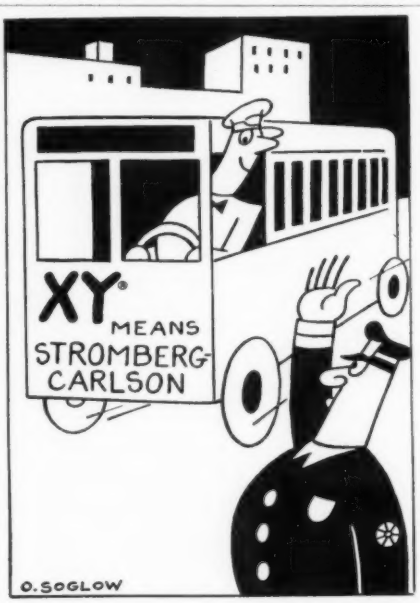
# PBX SWITCHBOARDS

★ Kellogg K-100 Masterbuilt PBX Switchboard 100 lines with line relays. 10 Manual or Dial Trunks. 15 Cord Circuits Through Night Service. *(NEW)*.

★ Kellogg 2 position Masterbuilt PBX Switchboard 200 lines with line relays. 10 Dial and 10 Manual Trunks. 15 Cord Circuits per position. (Reconditioned.)

★ Western Electric #506-B Cordless PBX Switchboard 12 lines 5 trunks and 5 connecting circuits. Trunks are for Manual or Dial Service-Through Dialing (Mahogany or Light Oak Finish) *NEW*.

**BUCKEYE TELEPHONE & SUPPLY CO.**
**1250 KINNEAR ROAD COLUMBUS 21, OHIO**
**HUdson 8-0655**



**RECONDITIONED**

**FEDERAL #804A**

Magneto Compact set convertible to desk or wall.

Equipped with capsule type transmitter and receiver. Can be used on long rural lines.

**PRICE $19.50 EACH**

Terms 2%—10 Days Net: 30

**BOHNSACK EQUIPMENT CO.**

GERMANTOWN, NEW YORK

---

**FEDERAL 101A VOICE-FREQUENCY RINGERS. New $150.00 Each.**

For signalling over any voice-frequency circuit such as a carrier channel, radio link, or through repeaters. Mounted in heavy carrying cases, or can be rack mounted. Complete with tubes, vibrators and instruction manual. Includes 20 cycle supply. Rings at 0 or plus 6 dbm at 500/20 or 1000/20 cycles, over a circuit with 30 db loss. Operates from 115 or 230 volts AC or 12 volts DC. Signal Corps type TP-8.

**P. J. PLISHNER**

550 FIFTH AVENUE NEW YORK CITY

---

***Scru-Tite anchors***

are not affected by atmospheric conditions. No corrosion or deterioration. Cold flows. A fraction of the weight of metal anchors. Drill hole, then hammer it home. A new line of expansion anchors available soon. Write for information.

Immediate delivery on all standard screw size anchors.

*Underwriter's Laboratory Approved*

**MASTERCRAFT PLASTICS CO. Inc.**

95-01 150th St. Jamaica 35, N. Y.

---

## Help Wanted

CABLE SPLICERS, Station Installers, Equipment Installers, Linemen. Experienced men needed. Steady work. good pay. Henkels & McCoy, 6100 N. 20th, Philadelphia, Pa.

EXPERIENCED CABLE SPLICER. Large Independent telephone company located in Indiana. Steady employment, Group Insurance, Benefit Plan, Pension Plan, good working conditions. Rate $2.46 per hour. Write giving age, experience and references. Write Box No. 3643, c/o TELEPHONY.

**CABLE SPLICERS • LINEMEN**
**STATION INSTALLERS**
**STEADY WORK, GOOD PAY.**
**MIDWEST LOCATION.**
**The Weikel Line Company, Inc.**
**FORT WAYNE, IND.**

**TELEPHONE ENGINEERS**

Inside plant, cross bar & step by step, engineering planning and review. Broad experience necessary. Work in pleasant environment in Eastern U.S. location. Age 65 or over no barrier if in good health and capable. Send full résumé including salary desired to Box No. 3646, c/o TELEPHONY.

## POSITION WANTED

TELEPHONY DIRECTORY ADVERTISING SALESMAN with know how to maintain good public relations with subscribers. Retired from own business (not advertising), vigorous, alert, seeks connection direct with a telephone company on straight commission basis. Has to relocate as present home is going to be demolished. Relocate anywhere and will live permanently in area he will work in. Business and bank references. Contact C. Fritz Hoelzer, 112 East 81 St., Apt. 1-W, New York 28, N. Y.

## WANTED TO BUY

IN THE SOUTH—east of the Mississippi—telephone company or exchange. Please send size and location. Write J. L. West, 882 McCreury St., Winston-Salem, N. C.

## SERVICES AVAILABLE

STATION INSTALLATIONS BY FIRST-CLASS INSTALLERS. Go anywhere. Let us know your needs. Write P.O. Box 462, Woodstock, Iowa.

REBUILDING OF AUTOMATIC ELECTRIC DIALS LIKE NEW OUR SPECIALTY. We are an old established company with over 40 years of experience in dial telephone service and repair. Try us—satisfaction guaranteed. Further information on request THE TELEPHONE SHOP, 608 S Dearborn St., Chicago, Ill.

---

**WANTED TO BUY**

**Telephone Company**

**Please send size and location**

**Box No. 3576, c/o TELEPHONY**

---

**ATLANTIC**

Creosoting Co., Inc., 17 Battery Pl., N. Y. C.

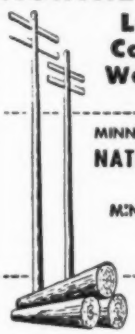
**Creosoted Pine Poles • Crossarms**

PLANTS AND OFFICES

Boston, Mass. Portsmouth, Va.
New York, N. Y. Philadelphia, Pa.
Savannah, Ga.

---

**NORTHERN WHITE CEDAR**



**Lodge Pole Pine**
**Coast Douglas Fir**
**Western Red Cedar**

*Plants and Yards:*

MINNEAPOLIS, MINN. • SPOKANE, WASH.

**NATIONAL POLE and TREATING DIVISION**

MINNESOTA AND ONTARIO PAPER COMPANY

Minneapolis 2, Minnesota

*Branch Offices:*

CHICAGO • SPOKANE

---

*POLES*

B. J. Carney & Co., 100 N. 7th St., Minneapolis, Minn.—Western red cedar poles. Pentrex Butt Treated or Plain.

Cascade Pole Co., P.O. Box 743, Tacoma, Wash. — Creosoted Douglas Fir and Cedar Poles.

C. M. Christiansen Co.—Northern White Cedar Poles, Pentachlorophenol treated. Plant and Yards, Phelps, Wis.

Dierks Forests, Inc. (formerly Dierks Lumber & Coal Co.) Wood Preserving Division, 700 Dierks Building, Kansas City, Mo. Southern Pine select poles, all sizes and lengths, creosote and pentapressure treated. Prompt shipment.

Eppinger & Russell Co., 80—8th Avenue, New York 11, N. Y.—Creosoted Poles and Cross Arms. Plants: Jacksonville, Fla., Norfolk, Va., Eddington, Pa.

International Creosoting and Construction Co., Galveston, Texas.—Creosoted Southern Yellow Pine Poles. Plants: Beaumont and Texarkana, Texas.

T. M. Partridge Lumber Co., 731 Lumber Exchange, Minneapolis, Minn. —Northern white and western red cedar poles, creosote and pentachlorophenol treatments.

Texas Creosoting Company—512 Main Street, Orange, Texas—Creosoted Southern Yellow Pine and Douglas Fir Poles. Can also treat with "Penta."

Suttle Brings You Many Plus Values

Keystone Wires

The Telephone Wire That Stays Up A Few Years Longer

Keystone steel telephone wire is just the same as any other good quality wire of its kind, except that it is galvanized in a little different manner. This different method provides an exceptionally pure coating of zinc, and it allows the coating to be a little thicker because it is drawn out of the zinc bath vertically.

These plus qualities make the coating last a few years longer to give you a lower cost in the long run. It is just one of the many plus values you get from Suttle.

Regular BB
High Strength 85
Extra High Strength 135

See Your SUTTLE Catalog

Serving Independent Telephone Men Since 1910

Suttle EQUIPMENT CO.

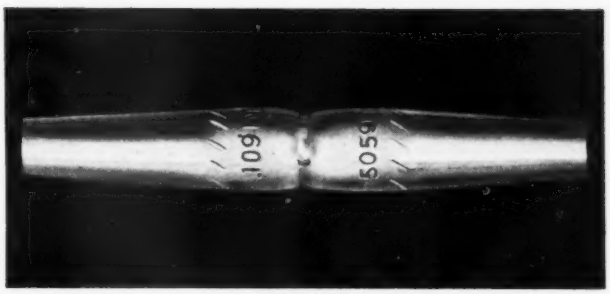
LAWRENCEVILLE ILLINOIS


# Index to ADVERTISERS

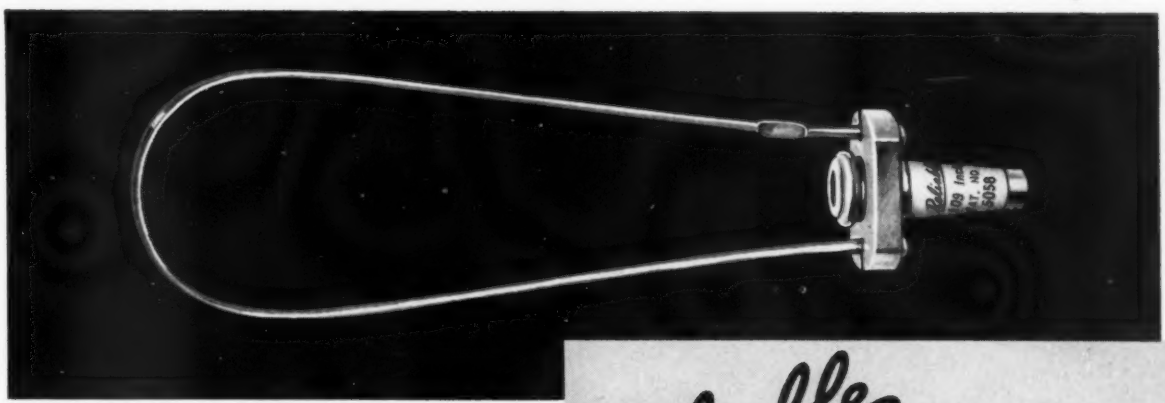

| | Page |
|---|---|
| Abbott Coin Counter Co. | — |
| Acker Drill Company | — |
| Acme Visible Records, Inc. | — |
| Acorn Insulated Wire Co., The | — |
| Alphaduct Wire & Cable Co. | — |
| American Appraisal Company, The | — |
| American Chain & Cable Co. | |
| Page Steel & Wire Div. | — |
| Wright Hoist Div. | — |
| American Creosoting Co. | — |
| American Electrical Heater Mfg. Co. | — |
| American Steel & Wire Co. | — |
| American Telephone & Telegraph Co. | — |
| Ansonia Wire & Cable Co., The | 9 |
| Armstrong Cork Co., Glass Insulator | — |
| Art Steel Company, Inc. | — |
| Atlantic Creosoting Co., The | 61 |
| Automatic Electric Sales Co. | 8, 12, 32-33, 35 |
| Baker Wood Preserving Co., The | — |
| Bartlett Tree Experts | 13 |
| Bashlin Company, W. M. | — |
| Bell Telephone Laboratories, Inc. | — |
| Berry & Co., L. M. | — |
| Bethlehem Steel Company | — |
| Bjornson Construction Co. | 59 |
| Bishop Mfg. Co. | — |
| Boardman, Ltd. | — |
| Buckeye Telephone & Supply Co. | 60 |
| Burgess-Manning Co. | — |
| Burroughs Corp. | 29 |
| C&D Batteries, Inc. | 53 |
| Cabaniss-Pogue Company | 59 |
| Cable Breather Corp., Inc. | — |
| Cable Spinning Equipment Co. | — |
| Calculagraph Company | 45 |
| Carney & Co., B. J. | 61 |
| Cascade Pole Co. | 61 |
| Chance Co., A. B. | — |
| Chase Brass & Copper Co. | 57 |
| Christiansen Co., C. M. | 61 |
| Cleverly Electric Works, The | — |
| Coffing Hoist Co. | — |
| Communi-Catering | — |
| Commercial Cord & Supply Co., Inc. | — |
| Copperweld Steel Co. | — |
| Creasman-Marshall Co. | 59 |
| Cullom & Ghertner | 58 |
| Cummings & Nott | 49 |
| Davis Construction Co. | — |
| Design Service Company | — |
| Dierks Forests, Inc. | 61 |
| Donnelley & Sons, R. R. | — |
| Dow Chemical Co., The | — |
| Duo Safety Ladder Corp. | 55 |
| Electric Storage Battery Co., The | — |
| Electric Specialty Co. | 51 |
| Eppinger & Russell Co. | 61 |
| Everstick Anchor Co. | — |
| Fitchburg Engineering Corp. | — |
| Florida Research Co. | 59 |
| Foley Constr. Corp., Robert E. | 59 |
| General Cable Corporation | — |
| General Insulated Wire Works, Inc. | — |
| General Machine Products Co., Inc. | 50 |
| General Telephone Directory | 64 |
| Gould-National Batteries, Inc. | 16 |
| Graybar Electric Co. | — |
| Greenlee Tool Co. | — |
| Haley & Co., R. G. | — |
| Ham's Construction Co. | 58 |
| Harris-McBurney Company | 58 |
| Henkels & McCoy | 58 |
| Hill, Cyrus G. | 59 |
| Hirsch Organization, Inc., Gustav | 57 |
| Holan Corp., J. H. | — |
| Holtzer-Cabot Div. | — |
| Homelite Corp. | — |
| Hubbard & Co. | — |
| Indiana Steel & Wire Co. | — |
| Ingram-Richardson Mfg. Co. | — |
| International Creosoting & Construction Co. | 61 |
| International Harvester Co. | 37 |
| International Standard Electric Corp. | — |
| Irwin Auger Bit Co., The | — |
| Johns-Manville | 48 |
| Kander, Allen | — |
| Kano Laboratories | — |
| Katolight Corp. | — |
| Kearney Co., Jas. R. | 52 |
| Kellogg Switchboard & Supply Co. | 4-5 |
| Klein & Sons, Mathias | — |
| Koiled Kords, Inc. | 56 |
| Koppers Co., Inc. | — |
| Leich Sales Organization | 14-15 |
| Line Equipment Sales | — |
| Line Material Co. | — |
| Linen Thread Co., Inc., The | 52 |
| Loomis Advertising Co. | — |
| Lorain Products Corporation, The | — |
| Lowell Insulated Wire | — |
| Mahood, Edwin T. | — |
| Mastercraft Plastics Co., Inc. | 61 |
| McCabe-Power Auto Body Co. | — |
| Minnesota Mining & Mfg. Co. | 31 |
| Monsanto Chemical Co. | — |
| Morrison Steel Products, Inc. | — |
| Morton Construction Co. | 59 |
| Murer & Smith | 59 |
| Murphy Engineering Laboratory | 39 |
| Natco Corporation | — |
| National Carbon Division | — |
| National Pole & Treating Div. | 61 |
| National Telephone Supply Co. | — |
| Neale Construction Co. | 59 |
| North Bros. Mfg. Co., Div. of the Stanley Works | 50 |
| North Electric Mfg. Co. | 10-11 |
| Onan & Sons, D. W. | — |
| Osmose Wood Preserving Co. | — |
| Overton Company, S. E. | — |
| Owens-Illinois | — |
| Page & Hill, Inc. | — |
| Partridge Lumber Co., T. M. | 61 |
| Pioneer Latex & Chemical Co. | — |
| Porcelain Products, Inc. | — |
| Preformed Line Products Co. | — |
| Premax Products | 58 |
| Radio Engineering Products Limited | 55 |
| Ray-O-Vac Company | — |
| Raytheon Mfg. Co. | — |
| Rebuilt Electric Equipment | 60 |
| Recordak Corp. | — |
| Reliable Electric Co. | 63 |
| Remington Rand Inc. | — |
| Rex Corporation, The | — |
| Roanwell Corp. | 56 |
| Runzel Cord & Wire Co. | — |
| Schauer Mfg. Co. | — |
| Signal Engineering & Mfg. Co. | — |
| Sloan, Cook & Lowe Co. | 59 |
| Seymour Smith & Son, Inc. | — |
| Soapstone Duct Co. | — |
| Stahl Metal Products | 54 |
| Stromberg-Carlson Co. | 2-3, 7, 46-47, 60 |
| Superior Cable Corporation | — |
| Suttle Equipment Co. | 58, 62 |
| Taylor-Colquitt Co., The | — |
| Telectric Co., The | 59 |
| Tel-E-Lect Products, Inc. | — |
| Telephone Answering & Recording Corp. | — |
| Telephone & Power Supply Co. | 58 |
| Tele-Systems, Inc. | — |
| Tele-Wire Supply Co., Inc. | — |
| Telkor, Inc. | — |
| Texas Creosoting Co. | 61 |
| Thompson Chemicals Corp. | — |
| Transandean Associates | — |
| United States Steel Corp. American Steel & Wire Co. | — |
| United States Steel Corp. Coal Chemical Div. | — |
| Utica Drop Forge & Tool Corp. | — |
| Utility Service Co., Inc. | 58 |
| Utility Tool & Body Co., Inc. | — |
| Wavell Showcase & Fixture Inc. | — |
| Western Electric Co. | 42-43 |
| Weston Electric Instrument Corp. | — |
| Whitney Blake Co. | — |
| Williams Inspection Co., A. W. | 58 |
| Wilton Elect. & Telephone Constr. Co. | 59 |
| Wiremold Co., The | — |
| York-Hoover Corporation | — |

DEPEND ON RELIABLE...MANY PLANT MEN DO!

# SPLICING AND DEADENDING WAS NEVER SO FAST AND SO EASY




Wirelink



Wirevise

## Reliable WIRELINK and WIREVISE

Wirelink and Wirevise are the natural means for splicing and deadending the solid steel wire supporting Rural Distribution Telephone Cable. Wirelink and Wirevise are also designed for use with .109 conductor and all 12 BWG iron wire.

Case hardened steel gripping chucks develop the nominal strength of the wire. To splice, simply push the wire into Wirelink; to deadend, push wire all the way through Wirevise. Wirelinks reach you packed with pure petroleum jelly to prevent corrosion and to make them suitable for splicing conductor as well as support wire.

Wirevise is internally coated with No-oxid oil and is one piece. The stainless steel bail is captive yet one leg can be freed for assembly through eye-type hardware.

***Send for sample and full information***

**RELIABLE ELECTRIC COMPANY**
**3145 Carroll Avenue**
**Chicago 12, Illinois**

Reliable

**Telephone Protective and Terminal Equipment for all Station, Line and Central Office Needs.**

***Over 45 Years Service to the Utilities***

# a calf looks big...until you've seen a COW!

Right now, for example, you may be satisfied with the net revenue of your directory. But suppose it was possible to materially increase that return . . . and with no added effort on your part?

Our Complete Directory Service Plan, now operating successfully in over 4400 American cities and towns, has upped revenue return for telephone companies by substantial amounts the first year!

Like to make *your* directory look better on your Profit & Loss statement? A representative from our nearest office will be glad to talk it over with you.

GENERAL SYSTEM

The best equipped telephone directory publishing organization in the world.

## GENERAL TELEPHONE DIRECTORY COMPANY

1800 Busse Highway · DES PLAINES, ILLINOIS · VAnderbilt 4-2164

ERIE, Penna. · G. Daniel Baldwin Building · Tel: 2-4187
LAFAYETTE, Indiana · Potter Building · Tel: 2-3720
LEXINGTON, Kentucky · 152 Barr Street · Tel: 4-7618
LONG BEACH, Calif. · 604 Pine Avenue · Tel: 6-7221
MADISON, Wisconsin · Tenney Building · ALpine 7-1667
SAN ANGELO, Texas · 110 South Taylor St. · Tel: 6738
SPOKANE, Wash. · N. 108 Washington St. · MAdison 4336
SPRINGFIELD, Ill. · Myers Bros. Building · Tel: 3-1236